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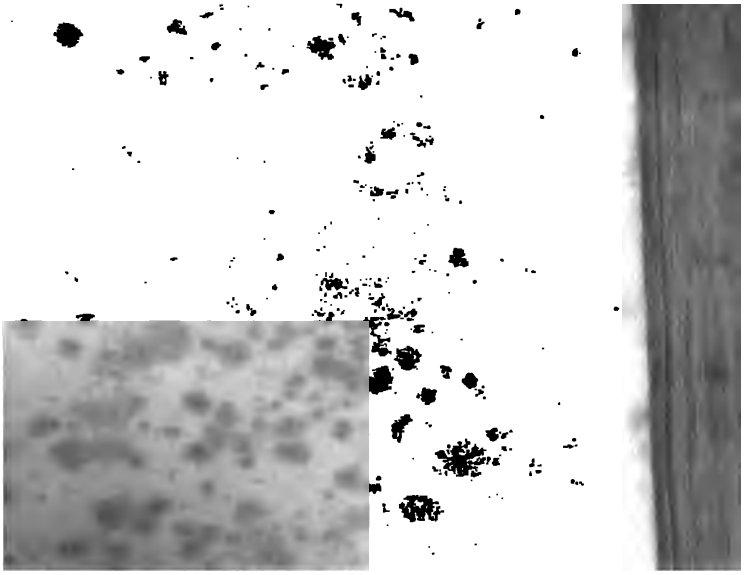

NATURAL
HISTORY

TREASURY OF

NATURAL HISTORY;

OR A

Popular Dictionary

OF

ANIMATED NATURE.

ILLUSTRATED WITH

[illegible] Figures [illegible]

ENGRAVED EXPRESSLY FOR THIS WORK

1236

THE

TREASURY OF NATURAL HISTORY:

OR,

A Popular Dictionary

OF

ANIMATED NATURE:

IN WHICH

THE ZOOLOGICAL CHARACTERISTICS THAT DISTINGUISH THE DIFFERENT CLASSES, GENERA, AND SPECIES, ARE COMBINED WITH A VARIETY OF INTERESTING INFORMATION ILLUSTRATIVE OF THE HABITS, INSTINCTS, AND GENERAL ECONOMY OF THE ANIMAL KINGDOM.

TO WHICH ARE ADDED,

A SYLLABUS OF PRACTICAL TAXIDERMY,

AND

A Glossarial Appendix.

EMBELLISHED WITH

ONE HUNDRED WOODCUTS, EXPRESSLY ENGRAVED FOR THIS WORK.

BY SAMUEL MAUNDER,

AUTHOR OF

"THE TREASURY OF KNOWLEDGE," "THE SCIENTIFIC AND LITERARY TREASURY," ETC. ETC.

"To Thee, whose temple is all space;
Whose altar, earth, sea, skies!
One chorus let all Being raise!
All Nature's incense rise!"

Pope.

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INTRODUCTION.

IONARY of ANIMATED NATURE, upon a comprehensive plan, had long occu- thoughts, before I first publicly announced my intention of making this to my series of popular "TREASURIES."* Now although I cannot charge ith being idle during that period, or with omitting to avail myself of the of the most distinguished authors that had recently contributed to the stock gical Science, it is certain that at the outset of this undertaking I under- difficulties I might have to contend with in treating the subject at the same *ularly* and, as it always ought to be treated, *systematically;* neither did I ly calculate the time and labour absolutely necessary to carry out my ori- ign; the publication of this volume has consequently been protracted. It been further delayed owing to a very serious illness with which I have been afflicted, but from which, with humble thanksgivings to the Almighty r of Life and Health, I am now rapidly recovering Having thus at length, been permitted to bring the Work to a close, I trust there may be reason that my readers will find it not altogether unworthy of their kind patronage, y way derogating from the high character which its precursors have so y borne.

be seen at the first glance, that the whole of the articles are printed in *ical* order; so that, the *name* of any animal being previously known, its al character and its habits can be instantly ascertained; while those persons to study this branch of Natural History according to the most approved *system* will only have to refer to this "INTRODUCTION," and they will find an outline of Cuvier's celebrated arrangement, as developed in the last his '*Regne Animal*' with those alterations and additions required by the advanced state of the science, but, under each Class and Order, references ferent genera, &c. described in the body of the Work. Thus, this CLASSIFIED ill be the means of supplying the necessary *systematic* information. But the articles be so consulted, or merely read in a more desultory way, I ust a vast fund of instruction and amusement will be found here collected. in truth, there ought. Many of the most celebrated standard zoological ave been put under contribution, and accurate information has been gleaned . Nor is it among the least of the advantages which, I presume, this will be found to possess over most others on this subject, that, besides s entirely new articles, and condensed abridgments of the more elaborate of many acknowledged authorities, I have had an opportunity of making

four volumes already published have a degree of favour far beyond their on the public in general, and have rally honoured by such encomiums critical bench as might possibly make r must cancelled. Gratifying as it is, to hear that I have *earned these opinions*," *I trust that I have so* humble an opinion of my own literary powers as will ever ensure me from being much injured by the intoxicating effects of over-doses of praise.

"Averse alike to flatter or offend,
Not free from faults, nor yet too vain to *mend*."

myself acquainted with many interesting facts now for the first time recorded in a popular digest of Animated Nature. It will also be apparent that I have not hesitated to make copious extracts from the recent Publications of various living writers who have displayed the wonders of Animated Nature under new aspects, and with increased force, originality, and beauty. In this, I have most scrupulously acknowledged the sources whence my pages have been enriched; and to the many scientific men and pleasing writers to whom I am thus indebted I beg to return my warmest acknowledgments. The names of Owen, Gray, Bell, Yarrell, Dr. G. Johnston, Broderip, Sowerby, Forbes, — of Gould, Darwin, Gosse, Hewitson, Knapp, and Waterton — of Kirby, Spence, Dr. Harris of Harvard College, Newman, and Westwood, are foremost among the many to whom these remarks apply.

It would be easy to extend my Introductory Remarks to a considerable length by dilating on the uses and advantages to be derived from an acquaintance with Natural History; nor would it be difficult to show how much that is bright and beautiful in Nature is for ever lost to him who has never become conversant with the study. But my inclination is to avoid what some ill-natured critics might term *twaddle*, and my limits forbid me to descant on a theme which others (who are far better qualified than I can ever possibly become) have treated with all the ardent enthusiasm that is inherent in the breast of every *true* votary of Nature. The subject, indeed, presents a wide field for the employment of the mental faculties; and I confess it is difficult to repress some of the thoughts that arise from its contemplation. No part can be viewed as unimportant or uninteresting — none that is unworthy of the most attentive consideration, or that can fail to impress the mind with feelings of profound admiration for the works of NATURE. Marvellous, indeed, as they are all, the most astounding manifestations of Supreme Intelligence are unquestionably displayed in his character as "LORD AND GIVER OF LIFE," as the Creator and Preserver of all that "live, move, and have their being." It is therefore that portion of the "wondrous whole" which we term The ANIMAL KINGDOM that demands our especial regard, and is in the highest degree calculated to gratify a laudable curiosity, as well as to reward the labours of the most diligent research.

The Zoological descriptions are followed by a *Syllabus of* PRACTICAL TAXIDERMY. This has been kindly furnished by Mr. A. Hepburn of Whittingham, an enthusiast in the pursuit of Natural History; and, besides having the merit of being *truly practical*, his directions to the Amateur Collector have been framed with more than ordinary attention to economy. It might have succeeded as a separate publication; but the attractive nature of this volume, I trust, is likely to make it very extensively known.

The GLOSSARIAL APPENDIX has been added to the other contents of the Volume in the belief that such a Collection of Terms was much wanted by the Tyro in Zoology, and that careful definitions of many words which frequently occur in the works of Naturalists would be esteemed as real desiderata.

As to the manner in which this Work has been embellished, I can speak with perfect satisfaction. About *Nine Hundred accurate Woodcuts* have been given; and in order that this highly important part of the Work should not be treated slightly or erroneously, I obtained the valuable assistance of Mr. Adam White, of the British Museum, a gentleman who to the enthusiasm belonging to the true Naturalist unites a sober judgment and great experience. To him was accordingly entrusted the selection of all the subjects, and under his superintendence every drawing has been made by competent artists. And here let me add that I have availed myself of Mr. White's acknowledged Zoological attainments, and improved my book by adopting many valuable hints and suggestions with which he has from time to time

THE ANIMAL KINGDOM,

ARRANGED IN CLASSES, ORDERS, AND GENERA, ACCORDING TO ITS ORGANIZATION.

It has long been customary to apply the terms ANIMAL KINGDOM, VEGETABLE KINGDOM, and MINERAL KINGDOM, respectively, to the three grand portions of the "mighty whole" into which, when speaking of the science of Natural History, the countless productions of the Earth are systematically divided. In this simple and obvious arrangement, the Animal Kingdom is conspicuously pre-eminent in rank and importance; inasmuch as it comprehends all organized and living beings provided with a mouth and stomach, and endowed with the powers of sensation and voluntary locomotion. The Animal and Vegetable Kingdoms are, however, so intimately blended together, that this description is an insufficient guide to distinguish those organized beings which may be said to be on the confines of either Kingdom. The possession of nerves being supposed to be indispensable to the power of motion, a nervous system has been considered the distinguishing characteristic of the Animal Kingdom, but in one division (Acrita, comprising Polypes, Infusoria, Animalcules, Sponges, &c.) no traces of nerves have hitherto been discovered. The best characteristic of the Animal Kingdom is the possession of a mouth or aperture through which food is received, and a stomach in which it is digested, and this would include all the organized beings which have ever been considered by naturalists to belong to the Animal Kingdom, except the various kinds of sponges. Our limits are prescribed, and further observations must necessarily be dispensed with in this place; but the following beautiful remarks by Mr. Rymer Jones so admirably illustrate the difficulty of drawing an exact line between the Animal and Vegetable Kingdoms, that we gladly conclude in his words: — "Light and darkness are distinct from each other, and no one possessed of eye-sight would be in danger of confounding night with day; yet he who, looking upon the evening sky, would attempt to point out precisely the line of separation between the parting day and the approaching night, would have a difficult task to perform. Thus is it with the Physiologist who endeavours to draw the boundary between these two grand Kingdoms of Nature; for so gradually and imperceptibly do their confines blend, that it is at present utterly out of his power to define exactly where Vegetable existence ceases, and Animal life begins."

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THE

OF NATURAL HISTORY;

OR, A POPULAR

Dictionary of Animated Nature.

-VARK. The name by which the
ed *Orycteropus Capensis* is known
utch colonists at the Cape of Good
The following cut, which is copied
anisll's work on the Animals of

VARK. (ORYCTEROPUS CAPENSIS.)

n Africa, will give a good idea of
. [For an account of its habits, see

-WOLF. A name given by the
ch colonists in the neighbourhood of
ope, in South Africa, to a carnivorous
ic animal, which at first sight might
y mistaken for a young striped
. It is about the size of a full-grown
; its habits and manners somewhat
ose of. [See PROTELES.]

OUTH ALIDE. An order of fishes in
ssic system, consisting of all those
ch have the ventral fins placed
ehind the pectoral, or upon the abdomen.
[See PHYSOSTOMI.]

ABOU-HANNES. An African bird, supposed to be the *Ibis religiosa*, or White Ibis, of the ancient Egyptians. [See IBIS.]

ABRAMIS. A genus of Malacopterygious fishes. [See BREAM.]

ABRANCHIATA. An order of the *Annelida*, composed of animals having no branchial appendages. Of these, the Earth-worm and the Leech are examples.

ABROCOMA. A genus of small Rodent animals, native of South America, remarkable for the extraordinary fineness of their fur. They have large ears, small claws, and the tail rather long, and not tufted. Their general aspect is intermediate to that of the Chinchillas and Rats or Voles.

ACALEPHA. An order of the class *Radiata*, comprising those animals which float and swim in the water, by alternate contractions and dilatations of the body, although their substance is merely gelatinous, and without any apparent fibres. They are popularly named *sea-nettles*, from their causing, when touched, a disagreeable sensation, like the sting of a nettle: they are also familiarly known as *jelly-fishes*, *sea-blubbers*, &c., from the extreme softness of their tissues, which

PURPLE OCEANIC JELLY-FISH.
(BOLTOCERA PURPUREA.)

melt away, as it were, when removed from the water. Their form is circular, and there is only one opening into the body, which serves both for the mouth and vent. Although possessed of a certain degree of locomotive power, the movements of the Acalephæ are very feeble; and they are consequently often driven by the winds and rough currents on shore, where they are either beaten to pieces by the waves, or left dry by the tide. The Acalephæ are of various forms; many, indeed, are not yet thoroughly known; but the specimens which

are most commonly met with in our climate, when examined in their native element, are seen to be composed of a large mushroom-shaped gelatinous disc, from the lower surface of which various processes and filaments depend. There are, in fact, obvious points of resemblance among them all; but still they admit of division into genera and sub-genera. Thus, we may observe, the genus *Medusa* includes those which have a central disc, more or less convex, on the upper surface, something like the head of a mushroom, and those that have a true mouth on the under-side of the disc; but this mouth is sometimes a simple opening, and at other times placed on a peduncle: while the genus *Æquorea* includes those in which the mouth is simple, and not on a peduncle. When the disc is furnished with tentacula all round, they are the *Æquorea* strictly so called, and one of the most numerous among the Acalephæ in the seas of warm climates. There are many others; and it would appear that their tentacula possess considerable muscular power, and that they are capable of drawing towards the mouth many small Molluscous and Crustaceous animals. (See JELLY-FISH.)

ACANTHOCEPHALA. A genus of parasitic worms belonging to the Parenchymata, an order of the Entozoa. As an example, the *Echinorhynchus gigas*, often found in abundance in the alimentary canal of swine, may be named. The form of this parasite is elongated, tapering to the tail: the head consists of a retractile snout or proboscis, armed with four circlets of sharp recurved spines, and it can be withdrawn or protruded at will. At the extremity of this spine-armed proboscis is the mouth, a simple suctorial orifice leading to a double nutritive canal.

ACANTHOCINUS. A genus of Coleopterous insects belonging to the *Longicorn* group. There are but few European species: the antennæ in the male are more than four times the length of the body.

ACANTHOPHIS. A genus of venomous serpents, allied to the Vipers, but distinguished from them in many essential characters. The head of the Acanthophis is broad and compressed, the mouth capable of great extension, and the tail is terminated by a little spur or horny excrescence, whence its name is derived. They are natives of Australia; secrete themselves in holes or beneath the roots of trees, and exhibit an astonishing tenacity of life. The *A. Brownii* is reckoned the most venomous Reptile found near Port-Jackson.

ACANTHOPODA. A tribe of Clavicorn Coleopterous insects (composed of only one genus, *Heterocerus*), distinguished by their flattened feet, which are broad, and armed on the outside with spines; the tarsi short and four-jointed with ordinary sized claws, and the body depressed; the prosternum is *dilated; the antennæ are rather longer than the head, eleven-jointed, the last six forming a nearly cylindrical serrated mass.*

ACANTHOPTERYGII. One of the three primary grand divisions, or natural orders, of fishes; originally recognized by our countrymen Willoughby and Ray, afterwards systematized by Artedi, and since established by Cuvier. The characteristics of the *Acanthopterygii* are, that they possess bony skeletons, with prickly spinous processes in the dorsal fins. The Stickleback and Perch are familiar examples of this division.

ACANTHURUS, or SURGEON-FISH. A genus of Acanthopterygious fishes, many of which are remarkable for the beauty of their

SURGEON FISH. (ACANTHURUS.)

form and the variety of their colours. They are chiefly distinguished by the sharp and lancet-like moveable spines with which they are armed on each side of the tail; hence, as they cannot be handled incautiously with impunity, they have obtained from English sailors, &c., the name of "doctors." They abound in the tropical seas, but are never seen elsewhere.

ACARIDÆ. Of these small spider-like animals, M. Latreille makes four divisions: 1. Mites, (*Trombidites*); 2. Ticks, (*Ricinites*); 3. Water Mites, (*Hydrachnellæ*); and 4. Flesh Worms (*Microsphæra*). Some of these exist on the ground, others in the water; some are parasitical, living on the blood and humours of the animals or insects on which they are fixed, while others insinuate themselves under the skin, where they multiply prodigiously. Of these latter, the Itch-insect (*Sarcoptes scabiei*,) is a remarkable example. Their mouths are, in general, formed rather for suction than for mastication; and their extremities are commonly armed with what may be likened to a small pair of pincers. Some have four eyes, some two, and several appear to have none. The common Cheese-

ACARUS DOMESTICUS.

mite (*Acarus domesticus*) is familiar to every one. Another has the power of spinning webs, and is well known as the Red Spider, in hot-houses, where it greatly injures the plants by covering the leaves with its webs. There are also Ticks, Harvest-bugs, Water Mites, and many others, which will be noticed in their alphabetical order. We may here, however, observe, en passant, that so widely are the *Acaridæ* disseminated through minute

and inanimate objects, that it would be difficult indeed for the most patient naturalist to describe them. Myriads swarm around us: they float in our drink; overspread our food and fruits; and if viewed with a microscopic eye, would make some loathe the choicest viands, and nauseate the most delicious productions of nature. The Mites possess great powers of life, resisting for a time the application of boiling water, and living long in alcohol.—It is a species of Acarus that Mr. Crosse is thought to have produced by galvanic action; but *naturalists* who have attended closely to such matters can readily and rationally account for their production in the usual way.

ACASTA. A genus of Cirrhipedes, found imbedded in sponges. [See BALANUS.]

ACCENTOR. A group of Passerine birds, many of which are peculiar to America; but including also our well-known Hedge-sparrow (*Accentor modularis*).

ACCIPITRES. The first order of birds in the Linnæan system, comprising such as have the beak or upper mandible hooked, and an angular projection on each side near the point; as the Eagles, Falcons, Hawks, and Owls. They are among birds what the *Carnivora* are among quadrupeds.

ACEPHALÆ. An order of Molluscs, distinguished by having no apparent head, but a mouth only, concealed in the bottom, or between the folds, of their mantle. The testaceous Acephala are by far the most numerous; all Bivalve shells, and some kinds of Multivalves belonging to them. [See LAMELLIBRANCHIATA; and for a familiar example, see OYSTER.]

ACERA. A name applied to a group of Aptерous insects, characterized by the absence of antennæ.

ACERÆ. A family of Gasteropodous Molluscs, distinguished by the tentacula being so much shortened, widened, and separated, that there seem to be none at all, or rather, they form together a large, fleshy, and nearly square buckler, under which the eyes are placed. They approximate in many respects to the *Aplysiæ*. The shell, in those which have one, is more or less convolute, without a visible spire, and the mouth has neither sinus nor canal. The genus *Bulla* belongs to this family.

ACHATINA. A genus of terrestrial Pneumonobranchous Gasteropods, popularly known by the name of *agate-snails*. They are characterized by an oval oblong shell, striated longitudinally, with the aperture ovate, and never thickened or reflected, and a smooth, straight columella, truncated at the base. All the species are oviparous; and among them are some which are the largest of all land shells. They always live near water about trees, and are very plentiful in Africa, near the Cape of Good Hope. Some are found in the West Indies; and there are two small species, *Achatina acicula* and *Achatina pygmæa*, found in England, among the moss at trees at the base of limestone

ACHATINA VIRGINIA.

rocks. The *Achatina columnaris* is one of the most remarkable of land shells; it is reversed, and the columella forms a winding pillar, visible within, quite to the summit of the spire. Many are covered with a thick epidermis, as the *Achatina zebra*; but others are destitute.

ACHATINELLA. A small genus of shells, differing from Achatina, in having the inner edge of the outer lip thickened, and a slight groove near the suture of the spire.

ACHERONTIA. A genus of Lepidopterous insects belonging to the family *Sphingidæ*. Of this genus there are two or three species closely resembling each other: one of these is found in this country; and is known as the DEATH'S-HEAD HAWK-MOTH (*Acherontia atropos*). This magnificent insect varies in the expanse of its wings from four to considerably more than five inches. The upper pair are of a very dark brown colour, varied with black, especially near the base, near which is an undulated bar of pale ochre: the disc is varied with deep black

DEATH'S-HEAD HAWK-MOTH. (ACHERONTIA ATROPOS.)

undulated lines, and ferruginous patches, minutely irrorated with white, of which colour there is a central spot, and several wavy connected bars beyond the middle. The posterior wings are fulvous orange, with a narrow central and a broader dentated bar running parallel with the hinder margin. The head and thorax are brownish black, the latter with a large pale, skull-like mark on the back: the abdomen is fulvous, with the incisures of the segments black, and a lead-coloured stripe runs down the back. When *disturbed or irritated*, this insect emits *a squeaking sound*. From this circumstance, *as well as from* the singular mark just *mentioned*, its appearance is regarded with *much dread by* the vulgar in several parts

of Europe, as ominous of some approaching calamity. The Caterpillar from which this curious insect proceeds is in the highest degree beautiful, and far surpasses in size every other in this country, measuring sometimes near five inches in length, and being of very considerable thickness. Its colour is a bright yellow; the sides being marked with seven elegant broad stripes or bands, of

CATERPILLAR OF DEATH'S-HEAD MOTH.

a mixed violet and sky-blue colour, which meet on the back, and are there varied with jet-black specks: on the last joint of the body is a horn or process, curving over the joint in the manner of a tail. This caterpillar is principally found on the potato and the jessamine, those plants being its favourite food. It usually changes into a chrysalis in the month of September, retiring for that purpose pretty deep under the surface of the earth; the complete insect emerging in the following June or July.

"Another peculiarity connected with the history of this Moth," Mr. Westwood observes, "consists in its attacking bee-hives, ravaging the honey, and dispersing the inhabitants. It is singular that a creature with only the advantage of size should dare, without sting or shield, singly, to attack in their strongholds these well-armed and numerous people; and still more singular, that amongst so many thousands of bees it should always contend victoriously. Huber, who first noticed the fact, asks, 'May not this moth — the dread of superstitious people — also exercise a secret influence over insects, and have the faculty, either by sound or some other means, of paralyzing their courage? May not such sounds as inspire the vulgar with dread be also the dread of bees?' He also states that he was witness to the curious fact that some bees, as if expecting their enemy, had barricaded themselves by means of a thick wall of propolis and wax, completely obstructing the entrance of the hive, but penetrated by passages for one or two workers at a time; thus instructing us, that at the period when the moth appears, when also wasps and robber bees attack the hive, it is advantageous to narrow the entrances to it, so as to prevent the depredations of these obnoxious insects. The species appears to be distributed over the greater part of England and Scotland, and many specimens are annually obtained by labourers when employed in getting up potatoes."

ACHETIDÆ. A family of Orthopterous insects, ordinarily called Crickets. [See CRICKET.]

ACHEUS. A name applied by M. F. Cuvier to such of the *Tardigrada*, or Sloths, as have three claws on their fore-feet.

ACHIRUS. A genus of flat-fish, belonging to the order *Malacopterygii*; in form resembling the Sole, but distinguished from all other genera by the total want of pectoral fins; hence their name. The Achiri have no air-bladder, and consequently remain for the most part at the bottom of the sea; yet their motions are there frequently very rapid. They abound mostly in the East and West Indies; and as they keep near the shores, they furnish a plentiful supply of wholesome food to the inhabitants. The most remarkable of this species is the *Achirus marmoratus*, which has the caudal fin distinct from the anal and dorsal, all of which are of a pale bluish-white colour, thickly studded with small black spots. The flesh is of a delicate flavour, and highly esteemed. There is also another of the Achiri deserving notice, the *Achirus pavoninus*, so called from the beauty of its spots, which cover the body of the fish like those on a peacock's tail.

ACIPENSER (sometimes written ACCIPENSER). A genus of fish in the Linnæan system, the distinguishing characteristics of which are, that the mouth is retractile and destitute of teeth, and the gills have only one aperture on each side. [See STURGEON.]

ACONTIAS. A genus of Serpents, formerly confounded with the *Angues*, or common snakes, but differing from those reptiles in certain peculiarities of osteological formation, as well as in their habits; and therefore Cuvier considered it necessary to establish this new genus. They are characterized by the absence of all the bones which represent the extremities of the other angues, while they retain the structure of the head common to those animals and the lizards, and have the body similarly covered with small scales only. The progressive movements of the Acontias are consequently very different from those of common serpents: they carry their heads and breasts erect; and, though by nature harmless and even timid, when pursued they will dart courageously at their assailant. There are few countries in the Old World in which some species of Acontias are not found; but our elder naturalists have generally confounded them with serpents of a dangerously venomous nature: hence the numerous fabulous stories which are related of them by ancient historians.

ACORN-SHELL. The popular name for the *Balanus* and other Cirrhipeds, which inhabit a tubular shell, whose base is usually formed of calcareous laminæ. It is always found attached to some shell or foreign body: it is multivalvular, unequal, and fixed by a stem, or sessile; the valves lie parallel to each other, and in a perpendicular position. The inclosed animal performs its necessary func-

thus by an aperture at the top; for the valves, being destitute of hinges, never open or separate. The tentacula from this animal being feathered, our credulous ancestors conceived the idea that it gave origin to a bird called the barnacle goose; nay, so prevalent was the opinion, that we find inserted in the Philosophical Transactions of this country a grave account of its transformation. [See BARNACLE.]

These curious but common shells are found in all seas, particularly on the coasts of Africa. They are affixed to marine bodies, generally in numerous groups, and the peduncle is sometimes found a foot long. A large log of timber (as Mr. Broderip remarks) covered with these animals, twisting and diverging in all directions, and so thick as entirely to hide the surface of the log, is a strange sight. They look like an enormous collection of serpents to the ignorant; and a living mass of this description, casually thrown into shallow water and left by the tide, has been so termed. Their growth must be exceeding rapid. A ship going out with a perfectly clean bottom will often return, after a short voyage, covered with them.

ACOUCHI. (*Dasyprocta acouchi.*) A Rodent quadruped, considerably smaller than the Agouti; it is of a deep olive colour, and

ACOUCHI.—(DASYPROCTA ACOUCHI.)

has only the rudiments of a tail. It inhabits the woods of Guiana; is of a mild, gentle, and timid disposition; and subsists on nuts, almonds, and other vegetable food.

ACRITA. The lowest division of the Animal Kingdom, (comprising the classes *Spongiæ, Polypi, Polygastrica, Sterelmintha,* and *Acalephæ,*) in which there is no distinct ganglionic nervous system, or distinct and separate alimentary canal. In most of the animals composing this sub-kingdom, no muscular fibres are to be perceived, yet of these many contract and expand their bodies, and are furnished with movable and sensitive tentacles, by which they seize their prey. Many also are capable of locomotion; others, like the plant, are fixed to one spot for life; and some are united together, and form compound animals. There is ordinarily no distinction of sexes; and reproduction takes place either by the simple division of the body, by granular ova, or gemmules which become detached from the parent body, the form of which they ultimately assume.

ACROCHORDUS. A *genus of Serpents discovered in Java. They are considered harmless, and are distinguished from others* by their skin being covered with innumerable small warts or tubercles, which, however, are only apparent when the skin of the living reptile is inflated or in preserved specimens. The only species accurately known at present is the *Acrochordus Javanicus* of Lacepède, chiefly remarkable on account of its diet; which, contrary to the general habit of the order, seems (according to the testimony of Hornstedt) to consist of fruits and other vegetable substances. This animal averages from eight to ten feet in length, the body growing gradually thicker from the head to the vent, and there suddenly contracting so as to form a very short slender tail.

ACROCINUS. A genus of Coleopterous insects belonging to the Longicorn group. The thorax on each side is furnished with a moveable tubercle ending in a spine; the body is depressed; the antennæ very long

HARLEQUIN BEETLE.
(ACROCINUS LONGIMANUS.)

and slender; the fore-legs much longer than the others; the elytra are truncated at the end and furnished with two teeth. The largest and best known species is the HARLEQUIN BEETLE (*A. longimanus*) of South America, the common name of which is derived from the agreeable mixture of grey, black and red, on the elytra, giving it a resemblance to the garb of a harlequin.

ACRYDIUM. The name applied by Fabricius to a genus of Locusts, characterized by a carinate thorax; filiform antennæ, shorter than the thorax; and equal palpi. [See LOCUST.]

ACTÆON. A genus of Mollusca allied to Doris, a few *species of which are found in this country. (For habits,* see NUDIBRANCHIATA.]

ACTINIÆ. These curious and interesting marine animals are closely allied to the

Sea-nettles, spoken of under the head ACALEPHÆ. They are distinguished by the form of their body, which is cylindrical, soft, fleshy, and susceptible of contraction and dilatation. They are also furnished with numerous tentacula, which are appended round the margin of the aperture that serves both as the mouth and vent; and these being not only radiated but of various lively colours, have given rise to the popular names of *Animal-flowers* and *Sea-Anemonies*, by which the Actiniæ are familiarly known. They are found on the shores of every sea, often covering the sides of rocks as with a tapestry of flowers. As in other tribes, each species has its peculiar haunt, and they differ from each other in shape, size, and colour; those in tropical regions far surpassing in gorgeous brilliancy such as are met with in the seas of colder latitudes. "These singular creatures," says an able contemporary, "have a power of reproduction equal to that so well known in the fresh-water polypus. They may be cut perpendicularly or across, and each cutting will

SEA-ANEMONIES. (ACTINIÆ.)

give origin to a new animal. The young Actiniæ are seen issuing, already formed, sometimes from the mouth; and sometimes the base of the old animal is dissevered, a portion remaining attached to the rock, where it continues to live, increasing in size, becoming more and more rounded, while, in a short time, a mouth, stomach, and tentacula are formed, presenting, to the surprise of an observer, a complete Actinia. At length, the side portions of this base give out globules, which are detached, and fix themselves upon adjacent rocks, where they grow and produce a new colony like the parent animal." Among the best ascertained Actiniæ are the large leathery Sea-Anemone (*A. sculifa*), the purple Sea-Anemone (*A. equina*), the white Sea-Anemone (*A. plumosa*), and the deep crimson species (*A. Jordæca*), which is found in the Mediterranean, and esteemed by the Italians a great delicacy for the table.

ACTINOCAMAX. A name given by Miller to the fossil shells of an extinct genus of Cephalopodous Mollusca, apparently connecting the *Belemnites* with the existing *Sepiæ*. They are principally found in the chalk formations of England and Normandy.

ACULEATA. The name for a section of Hymenopterous insects, whose antennæ are simple, and composed of a constant number of joints, namely, thirteen in the males, and twelve in the females. The larvæ have never any feet, and subsist on food which the females or neuters provide them with: one division of them, the *Prædones*, or predaceous tribes, which do not collect pollen, feeding upon other insects that have been stored up for them; and the other division, the *Mellifera*, or honey-collectors, feeding upon honey or pollen paste, similarly reserved for their use.

ADAPIS. The name given to a genus of Pachydermatous quadrupeds, now existing only in a fossil state, some imperfect specimens of which were found in the plaster quarries of Montmartre, and described by Cuvier in his great work, *Sur les Ossemens Fossiles*.

ADDA. A small species of Lizard, celebrated throughout the East as being efficacious in the cure of various cutaneous diseases to which the inhabitants of Egypt and Arabia are peculiarly subject. It is about six inches long: the body and tail cylindrical, the latter ending in a very sharp point; the face is covered with black lines, which cross each other; the body is of a light straw colour with black bands; and the scales shine as if they were varnished. It burrows in the sand.

ADDAX. (*Antilope addax.*) A species of Antelope, more heavily formed than the generality of *Antilopidæ*, and having large spiral horns, annulated to within about six inches of the points. It lives solitarily or in pairs on the borders and oases of the Nubian deserts. It has remarkably broad hoofs, provided by nature to enable the animal to move the more easily over the fine loose sand. The general colour of the Addax is a greyish-white; but the head and neck are of a deep reddish-brown with a mark of pure white across the lower part of the forehead.

ADDER. (*Vipera berus.*) The Adder, or Viper, is a venomous reptile of the serpent kind, seldom more than two or three feet long, being considerably shorter than the common snake in proportion to its bulk. It is of a dull yellow colour with black spots, and the abdomen entirely black. [See VIPERS.]

ADEPHAGA. A name given to a family of carnivorous and very voracious Coleopterous insects.

ADESMACEA. A family of Lamellibranchiate Molluscs, which either bore tubular dwellings in rocks, wood, &c., or live in testaceous tubes, their shells being consequently destitute of the hinge ligament. The genera *Pholas*, *Teredina*, *Teredo*, *Fistulana*, and *Septaria* belong to this family.

ADJUTANT, or GIGANTIC CRANE (*Leptoptilos Argala*), the *Argala* of India. This remarkable bird is a native of the warmer parts of India, and is of great use in removing noxious animals and carrion, which it devours with avidity. It stands five feet high, measuring from the tip of the bill to the claws seven and a half feet, and from the tip of each outstretched wing not less than fourteen feet. The head and neck are nearly bare; the beak is extremely large,

ADJUTANT (LEPTOPTILOS ARGALA.)

long, and strong; and under it hangs a downy pouch or bag, like a dewlap, which is capable of being inflated; the upper part of the bird is of an ash-grey colour, and the under part white. The voracity of the Adjutant is not more extraordinary than its capacity for swallowing: it makes but one mouthful of a rabbit, a fowl, or even a small leg of mutton; and when domesticated its habits of purloining render it necessary to keep all kinds of provision out of its reach. Dr. Latham observes that these birds in their wild state live in companies, and when seen at a distance, near the mouths of rivers, coming towards an observer, which they often do with their wings extended, "may well be taken for canoes upon the surface of a smooth sea; when on the sand-banks, for men and women picking up shell-fish or other things on the beach."

ADONIS BUTTERFLY. [See POLYOMMATUS.]

ÆGA. A genus of Isopodous Crustacea, parasitic on fish—hence frequently called *Fish-lice*. They are found in all parts of the world. In Newfoundland the fishermen call the species fish-doctors, and believe that the soft matter (mixed with eggs) found on the under side of the body of the females, is very useful in healing wounds. The adjoining cut will give some idea of the form of the species of this genus, which have the eyes generally large and approximating in front.

FISH-LOUSE

ÆGERIIDÆ. A family of Heterocerous Lepidoptera, comprising a moderate number of interesting insects, whose resemblance to various Hymenoptera and Diptera (owing to the elongate form of the body, and the nakedness of the wings, which are more or less transparent in many of the species) is somewhat remarkable. The antennæ are simple, fusiform, or thickened towards the tips, and generally terminated by a small pencil of hairs; the ocelli are distinct, and the labial palpi elevated; the abdomen is elongated; the wings have but comparatively few nervures; and the posterior legs are furnished with very long spurs.—The larvæ of these insects are of a cylindrical form, and with naked bodies destitute of a caudal horn: they have six pectoral, eight ventral, and two anal feet. They live in the interior of the branches or roots of trees, where they undergo their transformations to chrysalides, whose abdominal segments are armed with transverse rows of recurved points: these enable the chrysalis to push itself not only through the cocoon which the caterpillar had constructed from the decayed roots or branches, but half out of the hole in the stem previously made, it having had the instinct to turn round in its burrow, so that the head of the pupa should be towards the orifice.

The larvæ of some species, such as the *Ægeria culiciformis* and *Æ. formiciformis*, feed upon the apple, and that of *Ægeria tipuliformis* upon the pith of currant trees; in the neighbourhood of which the perfect insects may be seen flying, in the hottest sunshine, with great activity, or basking upon the leaves, alternately expanding and shutting the fan-like glossy appendages of hair which decorate the end of the body.

ÆGITHALUS. A name given to a genus of birds (the *Pendulous Titmice*) of the order *Passerinæ*. [See TITMOUSE.]

ÆGOTHELES. A name given to a genus of Passerine birds, distinguished by long tarsi, and toes apparently fitted for hopping from bough to bough; the wings comparatively short. The only known species inhabits Australia, and is the *Caprimulgus Novæ Hollandiæ* of Phillips. In the day it resorts to the hollow branches of trees (or *spouts* as they are called), and holes of the gum trees. It feeds on the smaller Coleoptera. Its flight is straight; lays four or five white eggs, which are nearly round; and has at least two broods a year.

ÆQUOREA. [See ACALEPHA.]

AGAMA; AGAMIDÆ. A genus and family of Saurian Reptiles. They have thick bodies covered with a loose skin, which is capable of being distended with air, at the will of the animal; the head is short, broad, and flat; the neck also is short, and the tail seldom longer than the body. Different species of them are to be met with in every climate; and as some are capable of changing the colours of their skin, they are in some parts of South America called chameleons. They generally lurk among rocks, heaps of stones, and mouldering ruins, their dull and sombre colours protecting them from observation: the more slender and active kinds, however, ascend trees with great facility, sport among the branches, and feed upon the insects which are generally to be found there

in abundance. Some of the Agamidæ met with in India, South America, and Australia, are very curious; but so numerous are the species, that we cannot here give more than a description of their general characteristics. [See Moloch.]

AGAMI, or GOLD-BREASTED TRUMPETER. (*Psophia crepitans.*) This interesting bird is about the size of a pheasant or large fowl; has long legs, and a long neck, but a very short tail, consisting of twelve black feathers, over which the rump-plumes hang droopingly. It inhabits the forests of South America, where it is found in numerous flocks: it runs swiftly, and when pursued, trusts to its legs rather than its wings. When domesticated, this bird is a pattern of fondness and fidelity; and is so jealous of its master's caresses, that it attacks the dogs and other animals who venture near him. It is sometimes used to protect domestic poultry from the attacks of birds of prey.

AGATHISTEGUES. A family of Cephalapodous Molluscs, in which the cells are gathered together in small numbers, and heaped up in a globular shape.

AGENIOSUS. A genus of Malacopterygious Abdominal fishes, belonging to the *Siluridæ*.

AGGREGATA. The name given to certain shell-less Molluscs, which are collected together in a common enveloping organized substance containing numerous compartments, from each of which a distinct occupant sends forth a circle of organs to collect food, which, after assimilation, is carried by a common and continuous system of vessels for the support and enlargement of the common dwelling.

AGLAURA. A genus of Dorsibranchiate Annelides, distinguished by having numerous jaws, but no tentacles, or which are entirely hidden; and cirrhi, which perform the office of branchiæ.

AGOUTI. (*Dasyprocta.*) A genus of Mammalia belonging to the order *Rodentia*, and classed with the *Cuvidæ*, or guinea-pig tribe. It is found in great abundance throughout South America; and as it bears some rude resemblance in its form and manner of living to the hare and rabbit, though it varies from both very essentially, it has sometimes been denominated the rabbit of that continent. It, however, varies still more from that animal in its habitude and disposition, than in its form. It has in a great measure the external covering of a hog; so also has it the hog's voracious appetite: it eats indiscriminately of every thing that comes in its way; and, when satiated, conceals the remainder, like the dog and fox, for a future occasion. The Agouti secretes itself in the holes of trees; its ordinary food consisting of potatoes, yams, and the fruits which fall in autumn. It uses its fore-paws, like the squirrel, to convey the food to its mouth; and as its hind legs are very long, it runs, or rather leaps, with considerable swiftness. The flesh is white and tender, and when fat

AGOUTI. (DASYPROCTA.)

and well dressed it is by no means unpalatable food. Agoutis are particularly destructive to the sugar-cane: the planters consequently use every means to catch them; and although they are still numerous in most places which are not settled and cultivated, their number is not now to be compared with what it was even long after the first colonists took possession of the West India islands. There is one kind of Agouti called the Mara, or Patagonian Cavy, considerably larger and more elegant than any of the others. Differently from most burrowing animals, it wanders, commonly two or three together, to miles or leagues from its home. It feeds and roams about by day; is shy and watchful; and generally produces two young ones at a birth. Naturalists give to this kind and species the name of *Dolichotis Patachonicus*.

AGRALÆ. An order of quadrupeds, destitute of teeth, but furnished with very long cylindric tongues, which supply that defect. Of this order there are only two distinct genera, the *Myrmecophaga* and the *Manis* (which see).

AGRIOPUS. A genus of Acanthopterygious fishes, particularly distinguished from other genera by having only nine rays in the pectoral fins. The *Agriopus torvus*, or Seahorse, as it is sometimes called, is about two feet long, and is common on the shores of the Cape of Good Hope.

AI. [See Sloth.]

AIAIA. (*Platalea.*) A bird of the Spoonbill genus, frequently seen in Brazil on the banks of rivers. It is of a pale but very bright and glossy flesh-colour on the back and wings, while the other parts are all beautifully white. Its flesh is considered wholesome and palatable.

AILURUS. A genus of carnivorous quadrupeds belonging to the family *Ursidæ*. The only known species, first found by Maj. Gen. Hardwicke, is the Wah or Panda (*Ailurus fulgens.*) It is about the size of a large cat; the fur soft and thickly set; above, of the richest cinnamon-red; behind more fulvous, and deep black beneath.

PANDA (AILURUS FULGENS.)

...ad is whitish; the tail annulated with ...; and the soles of the feet are hairy. ...egant animal frequents the vicinity ...rs and mountain torrents, passes much ...ime upon trees, and feeds on birds and ...aller quadrupeds.

...BES. A genus of Malacopterygious ... fishes, distinguished by having one ...ening; pectorals well marked, with a ...tween them; gill-lids small, with ...ays, and pointed teeth. The species ... the Indian Ocean.

...SMADON. A name which has been ...o some Bivalve Mollusca, of which the ...ater Pearl Mussel (*Mya margariti-*... an example.

...TÆ. A family of Mollusca, belong-... the second section of the order Tra-...da, containing the genera *Rostellaria*, ...ra, *Strombus*, &c. The shells of this ... are distinguished by the spreading of ...er lip.

...UDA. A genus of granivorous ...-birds, of which there are many ..., found in all parts of the globe. ...re characterized by a long and straight ...law, a strong straight bill, and by ...able to raise the feathers on the back ... the head into the form of a crest. ...reater part of them are migratory: ...lways build their nests on the ground, ...ay be considered as peculiarly birds of ...lds and meadows. [See LARK.]

...BATROSS. (*Diomedea.*) A genus of ...pede birds: the species are the largest ...aquatic birds, the wings of some when ...ed measuring fifteen feet, and the ... often exceeding twenty pounds. Its ...ge is white, with the exception of a ... the wing feathers and some transverse ...bands on the back. It has a strong, ...ong beak, of a pale yellow colour: the ...hich are flesh-coloured, are short and ...; and the wings are long, strong, and ... It preys on the wing, and is very ...ous; but though formidable from its ...d strength, it is not equally con-..., being frequently compelled to yield ...y to the sea-eagles, and sometimes ... the larger species of gulls. These ...re continually met with in the South-...ean, and are also seen in immense ...about Behring's Straits and Kamt-... in the early part of summer, at-... thither by the vast shoals of fish, ...migrations they follow. Besides the ... Albatross, here described, there are ...er species of less gigantic proportions, namely, the Albatross of China and the black-beaked Albatross.

When sailors accidentally fall overboard in latitudes where the Albatross abounds, they find it a most formidable enemy, even should only a few minutes elapse before they can be rescued by their comrades. Its powers of flight are prodigious.—Dr Arnott mentions an instance of one of these birds following a rapidly sailing ship for two or three days. One species is called by sailors the "Cape

WANDERING ALBATROSS
(DIOMEDEA EXULANS.)

Sheep," from flocks of them being seen off the Cape of Good Hope.—Captain Sir J. C. Ross, in his voyage to the Southern Seas, mentions that, in one of the islands frequented by seal hunters, the eggs of these birds, each of which averages about a pound in weight, are much esteemed—while the young birds, when first taken from their nest, are described by them as being quite delicious. It is possible, he adds, the sealers may have acquired the Esquimaux taste.

ALBIONES. A genus of Abranchious Annelides, distinguished by having the body bristled with tubercles.

ALBURNUS. A fresh-water fish, a species of the *Cyprinidæ*. [See BLEAK.]

ALCA. [See AUK.]

ALCADÆ. A family of oceanic birds, including the Auks, Puffins, and Guillemots. The power of their wings as organs of flight is generally very circumscribed; but their whole structure is admirably adapted for an aquatic life. The legs are extremely short, but powerful, and placed so far backwards that, in resting on the rocks, the birds appear to stand in an upright position. The toes are usually only three in number, and fully webbed. The bill is generally compressed, and often grooved at the sides, but it varies in form in the different genera. Their food consists of fishes, crustacea, and other marine productions; but they never resort to fresh water. [See AUK, &c.]

ALCEDO: ALCEDINIDÆ. A genus and family of birds, popularly known as *Kingfishers*, of which there are numerous

exotic species (all distinguished by the splendid colours of their plumage), but only one kind indigenous to this country. Their principal characteristics are, a long, straight, quadrangular bill, thick and pointed; tongue, short, flat, and fleshy; the nostrils at the side of the base of the bill running obliquely; the tail and legs short. These birds for the most part live on fish, which they transfix with the bill as with a spear: they are solitary in their habits, and build their nests in holes on the banks of rivers. [See KINGFISHER.]

ALCIOPE. A genus of Dorsibranchiate Annelides, distinguished by having two foliated cirrhi, or gills, and a couple of branchial tubercles.

ALCYONEÆ, or ALCYONIAN POLYPES. Under the heads "CORALS," "POLYPES," and "SPONGES," will be found such particulars as are deemed necessary to describe those singular marine productions. It is, therefore, sufficient to observe in this place, that the *Alcyoneæ* are somewhat similar to the last mentioned. They vary much in form, being either lobed, branched, rounded, or existing in a shapeless mass or crust; while the interior substance is of a spongy or cork-like nature, surrounded by tubular rays inclosed in a sort of tough fleshy membrane. The animals are lodged in round cells, separated from each other by thin partitions. They are to be found in all seas, and at various depths, resorting, in general, to sheltered places, or where the water is deep and still.

ALEA. A genus of minute land shells, found in marshy ground, roots of trees, moss, &c.

ALECTOR. (*Crax.*) A large Gallinaceous bird of America, somewhat like a turkey. They have large rounded tails, composed of stiff quills; build their nests in trees; live on buds and fruits; and may be easily domesticated. [See CURASSOW.]

ALECTURA. [See TALEGALLA.]

ALEPOCEPHALUS. A fish belonging to the *Exocœtæ*, or Pike family, found in the depths of the Mediterranean. Head naked, body with broad scales, mouth small, teeth minute and crowded, eyes very large, and eight gill-rays.

ALLIGATOR. (*Alligator lucius.*) This very formidable and ferocious Reptile is found in tropical climates, and agrees in every essential property with the Crocodile once so terrible along the banks of the Nile. There are apparently several species belonging to the order *Sauria*, family *Crocodilidæ*, their general plan of structure being the same as that of the lizards. They have a long flat head, thick neck and body, protected by regular transverse rows of square bony plates, raised in the centre into keel-shaped ridges. The mouth is extremely large, extending considerably behind the eyes, and *furnished in each jaw with a single row of pointed teeth, all of different sizes, and standing apart from one another.* The tongue is short and fleshy, and firmly attached to the under jaw throughout, so as to be incapable of protrusion; the eyes are placed in the upper part of the skull, and provided each with three distinct lids; and beneath the throat are two small glands

ALLIGATOR LUCIUS

which contain a musky substance. They have five toes on the fore-feet and four behind; but only the three inner toes on each foot are provided with claws. But the most remarkable, and, at the same time, most important organ they possess, is their long taper tail, which is strongly compressed on the sides, and surmounted with a double series of strong plates, which, converging towards the middle, there unite and form a single row to the extremity. Their feet are webbed; but it is to the tail they owe most of their progressive power in the water; and although it impedes their motions on dry land, even there it often becomes a powerful weapon of defence.

The Alligator is prodigiously strong; and its arms, both offensive and defensive, are irresistible. Its ordinary length is from fifteen to eighteen feet, though sometimes considerably more. The shortness of its legs, the vertebral conformation of the backbone, the muscles of the legs, and, in short, its whole frame, are calculated for amazing force. Its teeth are sharp, numerous, and formidable; its claws long and tenacious; but its principal instrument of destruction is its tail, with a single blow of which it is capable of overturning a canoe. Its proper element is the water; but it is also very terrible by land: it seldom, however, unless when pressed by hunger, or with a view of depositing its eggs, quits the water: it usually lays between fifty and sixty of these (which are about the same size as those of a goose, but oblong rather than oval), in one place, and covers them up with sand, leaving them to be hatched by the heat of the sun: it generally happens, however, that half of them are devoured by vultures, or fall a prey to various descriptions of ravenous fishes. Both the Alligator and the Crocodile are supposed to be very long-lived, and their growth is extremely slow.

The most extraordinary accounts are related of the ferocity and strength of this terrible destroyer. It usually floats along the surface, and seizes fish, fowl, turtle, or whatever other prey may fall within its reach; but, this method failing, it is then compelled to venture near the shore, where it conceals itself among the sedges to ex-

pectation of some land animal coming to drink. As the devoted victim approaches, nothing of its insidious enemy is to be seen; nor is the retreat of the former meditated till it is too late. The voracious reptile instantly springs on its prey with much more agility than might reasonably be expected from such an unwieldy creature; and, having secured it with its teeth and claws, instantly plunges into the water and drags it to the bottom, where it is devoured at its leisure. In its depredations along the banks, however, it sometimes happens that the Alligator seizes on an animal as formidable as itself, and meets with a desperate rencounter. With the tiger, in particular, which is in the habit of lurking in the vicinity of great rivers, it has frequent contests; and the instant this animal finds itself assaulted, he turns about with prodigious agility, and forces his claws into the eyes of the assailant, who immediately plunges with its fierce antagonist into the river, where the struggle continues till the tiger submits to a watery death.

As we have spoken at some length of the CROCODILE, and described the different species, it would be inconsistent with our general plan to extend this article much further. We therefore conclude with an anecdote from Waterton's "Wanderings in South America," clearly showing that man is not exempt from the attacks of this ferocious destroyer:—"One Sunday evening, some years ago, as I was walking with Don Felipe de Yrriarte, governor of Angustura on the bank of the Orconoque, 'Stop here a minute or two, Don Carlos,' said he to me, 'while I recount a sad accident. One fine evening last year, as the people of Angustura were sauntering up and down here, in the Alameda, I was within twenty yards of this place, when I saw a large Cayman [the common species of Surinam and Guiana] rush out of the river, seize a man, and carry him down, before any body had it in his power to assist him. The screams of the poor fellow were terrible as the Cayman was running off with him. He plunged into the river with his prey: we instantly lost sight of him, and never saw or heard him more."

ALLIGATOR TORTOISE. A genus of the EMYDÆ, or Marsh Tortoises, which are carnivorous in their habits; and some of the species, of which this is one, are formidable from their size and ferocity. It is a native of the lakes, rivers, and morasses of Carolina; and it is remarkable for its activity, darting suddenly upon aquatic birds, fishes, or other animals that come within its reach, and snapping them up: from which habit it is sometimes designated as the "Snapping Turtle." The species is the *Chelydra serpentina*. [See TORTOISE.]

ALOSA. A genus of Malacopterygious fishes of the *Clupeidæ* or Herring family, greatly resembling the Pilchard and Sardine. *Alosa vulgaris* is the common SHAD (which see).

ALPACA, or PERUVIAN SHEEP. (*Auchenia.*) In form and structure, this animal bears a strong resemblance to the camel; but is greatly inferior in size, and differs from it in the absence of the hump, the want of water-cells in the stomach, and in the conformation of the foot, which con-

PERUVIAN SHEEP. (AUCHENIA.)

sists of two toes completely divided, each with a rough cushion beneath, and provided at the end with a strong short hoof. There appear to be three closely allied species of these animals. That which we are now describing is said to be entirely confined to Peru, where the natives keep vast flocks of them for the sake of the silky lustre and fineness of their wool. It inhabits the more elevated parts of the mountain ranges, living almost on the borders of perpetual snow. [See LLAMA, GUANACO, and VICUNA.]

ALUCITIDÆ. A family of small Lepidopterous insects, nearly allied to the TINEIDÆ, but distinguished from that and all others by the wings being singularly divided into narrow feathered rays; the fore wings having two, three, four, or six, and the posterior wings three or six of such rays, which are beautifully feathered on each edge: they are carried horizontally in repose; the antennæ are long, slender, and setaceous; the spiral maxillæ are long; and the legs are long and slender. The larvæ are clothed with very long hairs; they have sixteen feet, and are very inactive; the pupæ are either naked, and enclosed in a transparent silken cocoon; or conical, hairy, and either suspended perpendicularly by a thread, or affixed at the posterior extremity of the body to a layer of silk or leaves. These insects vary in the time of their flight; the *Alucita* frequenting our gardens, and sitting with its beautiful fan-like wings on our hothouses, whilst the *Pterophori*, being crepuscular, fly over low plants. The rays of the wings are composed of the nerves, without any of the intervening membrane, which seems to be transformed into the fringe. In repose the *Pterophori* fold their wings so as to appear to consist of only one broad ray.

ALUTERES. A genus of fishes, belonging to the order *Plectognathi*: they are characterised *by a long body, the granulations scarcely visible, and a single spine in the first dorsal; but the pelvis is completely hidden in the skin.* For an example, see OSTRACION.

AMADAVADE. A small bird of the Finch tribe (*Fringillidæ*), having a beautiful red bill. The upper part of the body is brown, the rump dark red, and the prime feathers of the wings are black; as are also those of the tail, which are longest in the middle, and gradually slope to the sides: it is frequently kept as a pet in cages, and lives on seeds.

AMBLYRHYNCHUS. The name given to a genus of Lizards, very much resembling the Iguanas, common on all the islands throughout the Galapagos Archipelago. They differ, however, from the Iguana, in having,—instead of the long, pointed, nar-

AMBLYRHYNCHUS CRISTATUS.

row muzzle of that species,—a short, obtusely truncated head, and also in the strength and curvature of the claws. Mr. Darwin (in his "Journal of Researches," &c.) thus speaks of the one which is termed *Amblyrhynchus cristatus*:—"It lives exclusively on the rocky sea-beaches, and is never found, at least I never saw one, even ten yards inshore. It is a hideous looking creature, of a dirty black colour, stupid and sluggish in its movements. The usual length of a full-grown one is about a yard; but there are some even four feet long. I have seen a large one which weighed twenty pounds. On the island of Albemarle they seem to grow to a greater size than on any other. These Lizards were occasionally seen some hundred yards from the shore, swimming about; and Captain Collnett, in his voyage, says, 'they go out to sea in shoals to fish.' With respect to the object, I believe he is mistaken; but the fact stated on such good authority cannot be doubted. When in the water the animal swims with perfect ease and quickness, by a serpentine movement of its body and flattened tail,—the legs during this time being perfectly motionless and closely collapsed on its sides. A seaman on board sank one, with a heavy weight attached to it, thinking thus to kill it directly; but when, an hour afterwards, he drew up the line, the Lizard was quite active. Their limbs and strong claws are admirably adapted for crawling over the rugged and fissured masses of lava, which every where form the coast. In such situations, a group of six or seven of these hideous reptiles may oftentimes be seen on the black rocks, a few feet above the surf, basking in the sun with outstretched legs." Its habits are entirely aquatic, as well as its food, which consists of seaweed.

The species termed Amblyrhynchus subcristatus is terrestrial, and is confined to the central islands of the Archipelago. These "inhabit both the higher and damp, as well as the lower and sterile parts; but in the latter they are much the most numerous. Like their aquatic brethren, they are ugly animals; and from their low facial angle have a singularly stupid appearance. In size, perhaps, they are a little inferior to the latter, but several of them weighed between ten and fifteen pounds each. The colour of their belly, front legs, and head (excepting the crown, which is nearly white), is a dirty yellowish-orange: the back is a brownish-red, which in the younger specimens is darker. In their movements they are lazy and half torpid. When not frightened, they slowly crawl along with their tails and bellies dragging on the ground. They often stop and doze for a minute with closed eyes and hind legs spread out on the parched soil. They inhabit burrows, which they sometimes excavate between fragments of lava, but more generally on level patches of the soft volcanic substance. They feed by day, and do not wander far from their burrows. When attentively watching any one they curl their tails, and, raising themselves on their front legs, nod their heads vertically with a quick movement, and try to look very fierce; but in reality they are not at all so: if one just stamps the ground, down go their tails, and off they shuffle as quickly as they can." They live on the leaves of trees and other vegetable productions; and their flesh is considered a delicate kind of food.

AMBLOTIS. [See WOMBAT.]

AMIA. A small Malacopterygious fresh-water fish, found in the rivers of South America. It belongs to the *Clupeidæ* family; feeds on Crustacea, and is rarely eaten.

AMMOCETES. A genus of Chondropterygious fishes, allied to the Lampreys, the maxillary ring being without teeth, the fleshy lips semicircular. The common species, *Ammocetes branchialis*, is about the thickness of a goose quill, and is very common in some of the English rivers, where it is known as the Stone Grig. It lodges in the mud, where it preys on worms, insects, &c.; and is of no use but as bait for other fish. It has been accused of sucking the gills of fishes.

AMMODYTE, or LAUNCE. This fish, which is of the Malacopterygious or soft-finned kind, is named Launce from its lance-like shape, and is from eight to ten inches long; its form is slightly square, being rather rounded on the sides, and somewhat flattened above and beneath; the head is small and taper, and the under jaw much longer than the upper; the mouth is destitute of teeth, but at the entrance of the throat are two oblong bones for retaining the prey. The pectoral fins are small, and the tail is slightly forked; the general colour of the body is a greenish-blue on the back, and the belly is either of a silvery white, or of a yellowish hue. These fishes are in England called Sand-eels, being remarkable for their

habit of burrowing in the sand, in which they find the worms and insects that constitute their chief food. They are in their turn preyed upon by the larger fishes, par-

AMMODYTE, OR LAUNCE.

ticularly by the mackerel and salmon; to the support of the latter, whilst they are in the estuaries of rivers, the Launces are believed to contribute largely. The Launce spawns in the month of May, depositing its eggs in the mud, near the edges of the coast.

AMMODYTES. A genus of Serpents, nearly the size of the Viper, and allied to it in general appearance, though distinguished from it by an erect pointed process on the tip of the snout: its usual colour is either bluish-grey or brown, with a continued black dorsal band resembling that of the viper. A species of this genus is found in many parts of the East, and is so extremely poisonous as to prove fatal in three or four hours.

AMMONITES, or SNAKE-STONES. Spiral fossil shells, of which there are a great abundance in Europe, Asia, and America, especially in the Lias, chalk, and oolite formations. They appear like a snake rolled up; some are very small, but occasionally they are met with upwards of three feet in diameter. In some places they are so numerous that the rocks seem, as it were, composed of them alone. Upwards of 240

AMMONITES, OR SNAKE-STONES.

species have been already described; and it appears that many of them were very widely distributed; some being found in the Himalaya mountains, at an elevation of 16,000 feet, and others in various parts of Europe. Their numbers must have been very great, as M. Dufresne informed Lamarck that the road from Auxerre to Avalon, in Burgundy, was absolutely paved with them; and we know that it is no uncommon occurrence to find them used in parts of the west of England to pave the roads. It has been suggested that "these animals must have been very important agents, their carnivorous habits duly considered, in keeping the balance among the other tenants of the seas, by preventing the excessive multiplication of crustacea, as well as of other molluscs, and of fishes." The nearest *recent* ally of this extinct species is supposed to be the SPIRULA [which see].

AMPELIDÆ. A family of birds called CHATTERERS [which see].

AMPHIBIA. Strictly speaking, the term *Amphibia* will apply only to such animals as have the power of living, indifferently, at the same time, either upon land or in water, yet in common conversation we are accustomed to denominate Seals, Otters, Beavers, &c., besides many Reptiles, amphibious, because their organization disposes them to resort either to the land or water for procuring food, or whose habits are at once terrestrial and aquatic. But this is by far too comprehensive a sense. Linnæus applied the term generally to the third class of his system of zoology, which comprised not only all the animals since more properly denominated Reptiles, such as the Tortoises, Lizards, Serpents, and Frogs, but likewise the Cartilaginous Fishes. It is now admitted, however, that Linnæus was not correct in this classification, and that a truly amphibious animal should possess the extraordinary double apparatus (lungs and gills at one and the same time) for extracting the principle which supports animal life indifferently from either element. [See BATRACHIANS.]

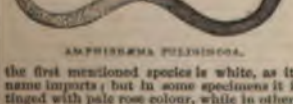
AMPHIDESMA. A genus of small round or rather oblong Shells, slightly gaping and inequilateral, found in the sand on the seacoasts of tropical countries, and also those of England, France, &c. The *Amphidesma variegatum*, described by Lamarck, is a native of the coast of Brazil. "In most bivalve shells," Sowerby observes, "the cartilage and ligament are united in one mass, or placed close to each other; the contrary in this case gives rise to the name, which signifies *double ligament*."

AMPHIOXUS, or LANCELET. A small fish of the Lamprey family. Its form is compressed; the head pointed, without any trace of eyes; a delicate membranous dorsal fin extends the whole length of the back; and the tail is pointed. At one time this was regarded as a mollusc, the best known species being the *Limax lanceolatus* of Pallas. It is found on the coasts of England and Ireland, in the Forth of Clyde, and in the Mediterranean. Mr. Gray has described a second species from the Eastern seas (*A. Belcheri*).

AMPHIPODA. An order of minute Crustaceans, which have the power of swimming and leaping with great facility, but always on one side. Some are found in streams and rivulets, but most in salt water; and their colour is of a uniform pale red or greenish. In this order the eyes are sessile and immoveable; the mandibles are furnished with a palp; the abdominal appendages are always apparent and elongated; and they have ciliæ, which appear to fulfil the office of branchiæ. The antennæ, ordinarily four in number, are composed of peduncle and slender filament; and the body is mostly compressed and bent. The appendages of the tail generally resemble little pointed stylets. Among the Amphipods most common on our shores are the Sandhoppers, (*Talitrus locusta* and *Orchestia littorea*,) found under stones, or under the mass of exuviæ thrown up by the tide on sandy shores, in troops of thousands, all active and leaping when disturbed in their retreats. The following passage from Paley's Natural Theology alludes to these minute crustacea: "Walking by the sea-side, in a calm evening, upon a sandy shore, and with an ebbing tide, I have frequently remarked the appearance of a dark cloud, or rather very thick mist, hanging over the edge of the water, to the height perhaps of half a yard, stretching along the coast as far as the eye could reach, and always retiring with the water. When this cloud came to be examined, it proved to be nothing else than so much space filled with young shrimps in the act of bounding into the air from the shallow margin of the water or the wet sand."

SANDHOPPER. (TALITRUS LOCUSTA.)

AMPHISBÆNA. A genus of Serpents, natives of South America, distinguished by their bodies having nearly the same uniform thickness throughout, by their small mouths and eyes, short tails, and their numerous rings of small square scales. The two best known species are *Amphisbæna alba* and *Amphisbæna fuliginosa*. They are destitute of fangs, and are consequently harmless and inoffensive; living, for the most part, upon ants and other small insects. The colour of



AMPHISBÆNA FULIGINOSA.

the first mentioned species is white, as its name imports; but in some specimens it is tinged with pale rose colour, while in others the head and back incline to a pale yellow or brownish cast. The *A. fuliginosa* is *either black with white* variegations, or *purple with yellow*. The eyes of the Amphisbæna are covered, and almost concealed, by a membrane; which, added to their naturally diminutive size, has given rise to the popular opinion that the animal was destitute of the organs of sight. The head is so small, and the tail so thick and short, that at first sight it is difficult to distinguish one from the other; and this circumstance, united to the animal's habit of proceeding either backwards or forwards as the occasion may require, gave rise to the credulous belief throughout the native regions of the Amphisbæna, that it has two heads, one at each extremity, and that it is impossible to destroy one by simple cutting, as the two heads mutually seek one another, and soon reunite!

AMPHITRITE. A genus of *Annelides*, belonging to the division *Tubicolæ*, and easily distinguished by their large golden-coloured setæ, disposed in a comb-like series or in a crown, or in one or several ranges on the front of the head; which may assist them in locomotion, and probably serve them for defence. Around the mouth are very numerous tentacles, and on either side of the commencement of the back are pectinated gills. Some of them compose slight tubes, of a regular conical form, which they carry about with them, when running in search of food; these tubes, which consist of fine grains of sand cemented together with great regularity, are simple cones open at both ends, and not attached; they are usually about two inches long, and may be frequently picked up on our shores. (See TUBICOLÆ.)

AMPHIUMA. A genus of Batrachian reptiles which abound in the lakes and stagnant waters of N. America. They first appear in the tadpole form, respiring by means of gills, and inhabiting the water; they afterwards gradually acquire small legs and feet, and would have an appearance similar to the water-newt, were it not for the extreme length of their body. Though they are capable of existing on land, they seldom abandon the watery element. There are only two known species, one characterised by being three-toed, which is three feet long; the other, a much smaller species, having only two toes.

AMPULLACERA. A genus of Molluscs, allied to the Ampullaria, two species of which are found in great abundance in New Zealand, living in pools of brackish water, and buried in sandy mud. When touched, the animal enters very deeply into its shell, and is at all times much hidden by it. The head is large, flat, divided into two lobes, and having two sessile eyes; no appearance of tentacula; foot short and square. The shell is thick and globular; mouth round, or oblique, having the lips united; spire short; operculum thin and horny.

AMPULLARIA. A genus of Molluscs found in the rivers of Africa, India, and South America. The shell is generally large, thin and globular; spire very short; whorls rapidly enlarging; the operculum thin and horny, and rarely calcareous. The animal has a large head furnished with four tenta-

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ANABLEPS TETRACPHTHALMUS.

scales; the head is flat; the snout blunt, and the mouth across its extremity, with small crowded teeth in both jaws; the intermaxillaries have no peduncle, but are suspended to the nasal bones; the pectorals are in part scaly; the dorsal is small, and nearer the tail than the anal; the pharyngals are large, and covered with small globular teeth. The species here delineated, *Anablepe tetraophthalmus*, inhabits the rivers of Guiana.

ANACONDA. (*Boa.*) A Ceylonese serpent, belonging to the Boa family, of enormous magnitude and strength; said to be capable of conquering the largest and fiercest quadruped, and concerning whose actions the most wonderful stories are related. An encounter between one of these serpents and a most powerful tiger is described by an eye-witness in language of fearful interest: "Though unable to get rid of its cruel enemy, the tiger gave it prodigious trouble. A hundred times would it rear up, and run a little way; but soon fell down again, partly oppressed by the weight, and partly by the folds and wreathed twists of the serpent round its body. But though the tiger fell, it was far from being entirely conquered. After some hours it seemed much spent, and lay as if dead; when the serpent, which had many times violently girded itself round the tiger, vainly attempting to break its bones, now quitted its hold, twisting its tail only round the neck of its prey, which was in no condition either to resist or escape. Having by degrees dragged the tiger to a tree, the monster wound its body round the animal and the tree together several times, girding both with such violence that the ribs and other bones began to give way: and, by repeated efforts of this kind, it broke all the ribs, one by one, each of which gave a loud crack in breaking. It next attempted the legs, and broke them severally in the same manner, each in four or five different places. This employed many hours, during all which time the poor tiger remained alive; and at every crack of the bones gave a faint but most piteous howl." A loathsome description of the serpent's "licking the body and covering it with its slaver," preparatory to the act of swallowing, is then given; and the account thus concludes: "Much time was employed in this business; but at length the serpent having prepared the whole to its mind, drew itself up before its prey; and, seizing the head, began to suck that, and afterwards the body, down into its throat." But this, it appears, was the work of some hours; and it had so gorged, that, the next morning, on being attacked by the

party who were witnesses to his monstrous meal, the serpent could neither defend itself nor retreat; and it was dispatched, by repeated heavy blows on the head with large clubs. It was thirty-three feet in length.

ANAMPSES. A genus of Acanthopterygious fishes found in the Indian seas. They are small and beautifully coloured. The head is without scales; and they are distinguished by having two flat teeth, which project from the mouth, and curve upwards.

ANARRICHAS. A genus of Acanthopterygious fishes, bearing great resemblance to the Blennies, except in their being destitute of ventral fins. Their dorsal fin is composed entirely of simple but not stiff rays, and extends, as does also the anal, very close to the base of the caudal, which last, as well as the pectorals, is rounded. The whole body is soft and slimy. Their front teeth are large and conical, and they may be regarded as fierce and dangerous fishes. [See WOLF-FISH.]

ANAS. The name of a large Linnean genus of birds, of the order *Anseres*; whose distinguishing character is, that the beak is convex, terminating in an obtuse point; as the Swan, the Goose, the Duck, Widgeon, &c.

ANASTOMA. A genus of land shells, resembling the other *Helices* in every respect, except in the peculiarity of the last whorl taking a sudden turn and reflecting the aperture upwards, so as to present it on the same plane with the spire; so that the animal must walk with the spire of its shell downwards, resting on its foot.

ANATIFERÆ. A name given to a genus of multivalve Cirrhipeds. [See ACORN-SHELL.]

ANATIDÆ. The *Duck* tribe; a family of web-footed birds; order *Natatores*. They are distinguished by a broad depressed bill, which is covered with a soft skin; and by the hind toe not being included in the web. The bill is furnished with a set of horny laminæ at the edge of each mandible, which serve to filter the fluid taken up by the bill, and retain the solid substances taken up with it: the tongue is large and fleshy, the gizzard strong and muscular, and lined with a tough coat, so as to be capable of grinding down the shells of the molluscs on which they feed. Many are migratory, and fly with great strength at a considerable elevation.

ANCHOVY. (*Engraulis encrasicolus.*) A well known small fish, abounding in many parts of the Mediterranean, particularly on the coasts of Italy, Greece, and Spain: it occurs also, though not in such considerable numbers, on some of our western coasts, as well as on those of France and Holland. It is about four inches long, of a bluish-brown colour on the back, and silvery white on the belly. It is covered with large, thin, and easily deciduous scales, and may be readily distinguished from the Sprat and other kindred species by the anal fin being remarkably short. *Mr. Couch, in his Cornish Fauna*, says, "this fish abounds towards the end of summer, and if attention were paid to the fishery, enough might be caught to supply the consumption of the British islands;" and he adds, that he has seen it in the Cornish seas of the length of seven inches and a half!

ANCILLA, or ANCILLARIA. A genus of Mollusca, inhabiting a spiral, univalve marine shell, which, when the animal is alive, is so much covered by the foot, that only the middle of the back can be seen. The species are numerous, and they are chiefly confined to tropical climates. The shells are smooth, and appear as if highly polished.

ANCYLUS. A fresh-water Gasteropodous Mollusc, with a shell similar to that of a Patella. They live in stagnant waters and in rivulets, adhering to stones and aquatic plants.

ANDRENIDÆ. A family of solitary Bees, each species consisting only of males and females. The mandibles are simple, or terminated by one or two notches; in which the labium and terminal maxillary lobes do not form an elongated proboscis,—a character which distinguishes them from the APINÆ [which see]. The antennæ are elbowed; and the hind legs are generally completely clothed with hairs, the trochanters and femora in the females being pollinigerous. The species of the genus Andrena are very numerous; they make their appearance in the early spring and summer months, and have very much the appearance of hive-bees. The females collect pollen from the stamens of flowers, rather by means of the general hairiness of the body than with the posterior tarsi: this they form, by the addition of a little honey, into a paste for the food of their progeny. They burrow in the ground, in sandy situations, especially if exposed to the sun, often to a considerable depth. At the foot of these burrows they deposit an egg, with a sufficient quantity of this prepared food for the supply of the future grub; which they then cover up, and proceed, cell after cell, closing up the hole at the top with earth, to prevent the attacks of parasites, which, notwithstanding, often succeed in entering the hole and depositing their eggs in the cells. The sexes of many of the species are unknown.

ANEMONIES, SEA. [See ACTINIA.]

ANGEL-FISH, or MONK-FISH. (*Squatina Angelus.*) This fish, which is more remarkable for its singularity of form than for its beauty, would seem to connect the genus of Rays and Sharks, were it not for the situation of its mouth, which is an exception from each. It is said to have acquired the name of Angel-fish from its extended pectoral fins having the appearance of wings; and it is called Monk-fish, because its rounded head appears as if enveloped in a monk's hood. The head is large, and the mouth very wide; the teeth are broad at the base, but slender and very sharp above, and disposed in five rows round the jaws. By means of muscles uniting them to the jaws, the teeth are capable of being raised

...ssed like those of the other shark ...he eyes are small, and behind each ...ce in the shape of a crescent. The ...f a pale ash-colour, and extremely ...aving a prickly tuberculated line

...-FISH. — (SQUATINA-ANGELUS.)

... middle; the belly is white and ... the pectoral fins are large, and ...orizontally to a considerable dis... ...e ventral fins are also placed in ...manner, and the tail is bifurcated. ...gel-fish is met with on many parts ...itish coasts, but is most numerous ...uthern. It is very voracious, and ...the smaller flat-fishes, which swim ...the bottom; and, like them, it oc... ...hides itself in the loose soft soil. It ...ingly fierce, and dangerous to ap... ...ner does it look less fierce or malig... ...it really is. It sometimes attains ...of seven or eight feet, and weighs ...hundred pounds; but instances of ...comparatively rare. Formerly the ...held in high estimation, but it is ...garded as rank and coarse. The ...g rough, is used to polish wood and ...well as for other uses in the arts.

...ER. (*Lophius piscatorius.*) This ...nary fish is not unfrequently met ...er coasts, and is known also by the ...f the Fishing-frog, Toad-fish, and ... It is the most uncouth, ill-shapen ...scatory tribe, resembling the frog ...dpole state, from which it derives ...s common appellations. The head, ...circumferentially larger than the ...dy, is flat on the top; the mouth ...wide as the head; the lower jaw ...erably longer than the upper, and ...all round the edge; both jaws are ...ith numerous sharp conical teeth, ...owards. The nostrils have no ex... ...tion, but there are two internal ones ...pply their place; the eyes are large,

...LER. — (LOPHIUS PISCATORIUS.)

...ies brown, and the pupils black; ... fins broad, rounded at the edge, ...t at the base; ventral fins broad, ...and fleshy, jointed like arms, and divided in the insides. The colour of the upper surface of the body is brown, the lower part white, and the skin smooth throughout: ventral and pectoral fins white; tail nearly approaching to black. The Common Angler is usually about three, but sometimes it is six feet in length; lives, as it were, in ambush, at the bottom of the sea; and by means of its fins it stirs up the mud and sand so as to conceal itself from other fishes on whom it preys.

Allied to the Common Angler, above described, are six others:—1. The CORNISH ANGLER (*Lophius Cornubicus*), which is of a longer form, with the head more bony, rough, and aculeated, as well as destitute of the fringed appendages. 2. The MURICATED ANGLER (*Lophius muricatus*); body very flat, orbicular, and covered above with very numerous small tubercles tipped with divided or radiated spines; hind part contracting suddenly, covered with similar spines, and terminated by the tail-fin. 3. The BEAKED ANGLER (*Lophius rostratus*): this is a native of the South American seas, from twelve to eighteen inches long; the body broad in the middle, tapering towards the tail, and strongly acuminated in front, so as to form a sharp-pointed lengthened snout; mouth of moderate width; pectoral fins situated on very strong arm-shaped bases; tail rounded at the end; and the whole animal covered above with numerous roundish, crenated tubercles, with pointed tops. 4. The HARLEQUIN ANGLER (*Lophius histrio*). A most grotesque and singular fish; body thick, but much compressed; ventral fins resembling short arms, being situated very forward, and palmated at their tips; dorsal fin large, and extending from the middle of the back nearly to the tail, which is of a rounded shape. Above the upper lip rises a long and slender cartilaginous process or filament, dividing at top into two dilated oval and pointed appendages: beyond this a strong and fleshy process, terminated by a few filaments; and beyond this a much larger and thicker process, tipped like the former; lower tip and dorsal fin bearded with scattered cirri; and the whole animal of a yellow-brown colour, irregularly marbled with brown or blackish variegations, here and there edged with white. 5. The STRIPED ANGLER (*Lophius striatus*). This fish is nearly allied to the *Lophius histrio*, but differing in being marked all over, chiefly in a transverse direction, by very numerous narrow black streaks. It is a native of the Pacific Ocean. 6. The MARBLED ANGLER (*Lophius marmoratus*): of an oval shape; body slightly compressed; back arched, and furnished with a long, single, and rather narrow fin, extending nearly to the tail; ventral fins short, arm-shaped, and terminated by thick lobes, so as to resemble the paws of a quadruped: colour on the upper parts black-brown, with a few bluish clouds and spots; on the lower parts whitish, and on the sides of the fish the white parts edged with a dull red; eyes white, radiated with black; mouth wide; and above the upper lip a long filament, forking into two at the tip.

ANGUILLA. [See Eel.]

ANHINGA, or White-bellied Darter. (*Plotus anhinga.*) A very elegant species of the *Colymbidæ*, or Diver family, common in some parts of Brazil. Its body is about the size of a tame duck's, but its length, from the tip of the beak to that of the tail, is nearly three feet. It has a long, slender bill, yellowish at the base; a small head; the neck long, round, and slender, and covered with soft downy feathers of a rufous grey colour; while those on the breast, belly, and thighs are of a silvery whiteness. The plumage at the beginning of the back is brown, each feather having an oblong spot of whitish yellow in the centre, so that it appears speckled: the rest of the back is black; and the tail consists of shining black feathers tipped with grey. The legs are remarkably short, the thighs feathered, and the claws very sharp and crooked. The Anhinga builds its nest on trees, on which it roosts at night and when not on the water, being very rarely seen on the ground. It feeds upon fish, which it catches most dexterously, darting upon them with great rapidity.

These birds delight to sit in little communities, on the dry limbs of trees, hanging over still waters, with their wings and tails expanded. When any one approaches, they will drop off the limb into the water as if dead, and for a minute or two are not seen; when on a sudden, at a great distance, their long slender heads and necks only appear, so that whilst swimming they greatly resemble snakes, no other part of them being visible, except occasionally the tip of the tail.

ANI. [See Crotophaga.]

ANIMAL FLOWER. A name given to one species of *Actinia*, the animal bearing some resemblance to a flower with a radiated disc; its tentacula being disposed in regular circles, and tinged with a beautiful variety of bright lively colours, as the marigold, anemone, &c. [See Actinia.]

ANIMALCULÆ, or ANIMALCULES. A term applied to minute animals of various orders, many of which can only be seen by the aid of a microscope. [See Infusoria.]

ANNELIDA. A division of the class *Vermes*, comprising species which may be characterized as possessing an elongated body, divided into numerous segments, marked by transverse lines, and generally furnished with a series of bristly appendages which serve as legs. Many of the Annelida are red blooded, and have a complete apparatus for circulation and respiration. Some live in fresh, others in salt water; and others, like the Hair-worm, are amphibious. In some the bristly appendages are implanted on fleshy tubercles; in others they are only represented by a few short stiff hairs; while in other instances, as in the Leech, there is no trace of any members or appendages to the body. The bristles are usually sharp, and *sometimes barbed, serving* not only to attach *the animals to soft substances*, and to hold firmly on to rocks and other solid surfaces, but to aid their movements through the water. When there are no locomotive appendages, the extremities of the body are usually furnished with suckers.

ANNULATA SEDENTARIA. A tribe of soft, elongated, and worm-shaped animals, inhabiting a tube which they never quit. The body has either transverse segments or wrinkles; the head, eyes, and antennæ are furnished with retractile knobs, in lateral rows. They are usually attached to marine substances, and the greater part of them are carnivorous.

ANOA. (*Anoa depressicornis.*) A ruminating animal of Sumatra, at present but imperfectly known to naturalists; by some considered a small species of wild buffalo, and by others a kind of antelope. The living animal has not been brought to this country, but several skulls and horns are deposited in the British Museum, and in that of the Zoological Society. The horns are wrinkled, but perfectly erect and straight, and the head is long and narrow.

ANOBIUM. A genus of Coleopterous insects, some of which inhabit the interior of our houses, where they do much injury in their larva state by gnawing furniture, books, &c., which they pierce with little round holes: others feed upon wafers, preserved specimens of natural history, &c. The curious sound made by one of these has given it the name of Death-watch [which see].

ANODONTA. A fresh-water Molluscous animal, inhabiting a thin, inequivalve, inequilateral shell; hinge straight, with either no teeth or mere rudiments; shell transverse; ligament external. The valves are thin, large, and pearly; and from their shape and lightness they are used in France for skimming milk. The Anodonta is found in every quarter of the world.

ANOLIS. A genus of reptiles peculiar to America, and supplying the place that is occupied by the chameleons in the Old World. Cuvier distinguishes them from the *Iguanæ*, by their having teeth in the palate of the mouth as well as in the maxillary bones. The *Anolis* is a small, slender, active animal; frequenting woods and rocky places; and running, leaping, and climbing with singular agility. It is furnished with a loose skin or bag beneath its throat, which, when inflated, frequently changes its colour: in short, whenever these creatures are under the ex-

ANOLIS.

ales, which give the skin the appear-
fine shagreen. The hind legs are
ager than those before; and each
five toes. Several species of this
habit the West India Islands; the
f them not being more than a foot

IA. A genus of marine Mollusca
ble for the perforation of one of its
y a large aperture; through which a
ndinous ligature passes, to be in-
to a third plate, by which the ani-
eres to foreign bodies. They are
found attached to oyster and other
This family has long been known in
state, and contains many species.
ay be divided into two genera; the
late, and the multarticulate: in the
late Anomia, the hinge of the under
rms a large cavity, the corners of
make two prominences or joints, and
er valve is indented into it by corre-
g depressions: in the multarticulate
the hinge lies in a long straight line,
et with many teeth.

MURA. A section of Decapod Crus-
, consisting of many genera; the ha-
ons of which, as the Hermit or Sol-
ab (the type of the genus *Pagurus*),
ghly curious and interesting. [See
r CRAB.]

PLOTHERIUM. A genus of extinct
pods, found in a fossil state, and
seem to range between the Pachyder-
and the Ruminantia. They had six
, four canine, and four molar teeth,
a jaw, forming a continued line; and
t had only two toes, sheathed by sepa-
ds; but the toes had separate meta-
and metatarsal bones, as in the hog,
l of springing from a single canon
s they invariably are among the Ru-

at present existing.

ANOPLURA. An order of parasitic in-
sects — the *Lousa* and its allies; whose pre-
sence on the human body is usually regarded
as an indication of habitual filthiness. It is
to be observed, however, that the inferior
animals are subject to them, and that almost
every quadruped and bird is infested with
some one or other of these parasitic insects.

ANSERES. The third order of the Lin-
næan class *Aves*, thus characterized: A
smooth beak, covered with skin, gibbous at
the base, and broader at the point; feet
formed for swimming, having palmated toes
connected by a membrane; the legs thick
and short; and the body bulky, plumy, and
downy: food fishes, frogs, aquatic plants,
worms, &c. The Goose furnishes a ready
example.

ANT. (*Formica.*) A well-known genus
of Hymenopterous insects, famed from all
antiquity for their social and industrious
habits, for their love of order and subordina-
tion, and for being a pattern of unwearing
industry and economy. They are distin-
guished from other *Hymenoptera* by their
habit of residing under ground in numerous
societies, and by the existence of neuters
among them, by which class the labours of
the community are chiefly performed. The
males have always four wings; the females
are larger than the males, and only possess
wings during the pairing season; but the
neuters have none at any period.

ANT (FORMICA RUFA), MALE AND FEMALE.

The common European Ants are, in gene-

having the extremities of each armed with two small claws, which assist the insect in climbing. The body is of a brown chesnut colour, shining like glass, and covered with extremely fine hair. From this formation, it would appear, the Ant seems bolder and more active than any other creature of the insect tribe of the same size; and, indeed, it possesses sufficient intrepidity to attack an animal many times larger than itself.

The nests of Ants are differently constructed in the different species, but all are very curiously and regularly arranged. "If an Ant-hill," says Mr. Broderip, "be examined any time after Midsummer up to the close of Autumn, there may be seen mixed with the wingless workers a number of both males and females furnished with white glistening wings. These, however, are neither kings nor queens in the state, at least so far as freedom of action is concerned, for they are not allowed to move without a guard of workers to prevent their leaving the boundaries; and if one straggles away unawares, it is for the most part dragged back by the vigilant sentinels, three or four of whom may, in such cases, be seen hauling along a single deserter by the wings and limbs. The workers, so far from ever facilitating the exit, much less the departure of the winged ones, more particularly the females, guard them most assiduously in order to prevent it, and are only forced to acquiesce in it when the winged ones become too numerous to be either guarded or fed. There seems, indeed, to be a uniform disposition in the winged ones to desert their native colony; and as they never return after pairing, it would soon become depopulated in the absence of females. The actual pairing does not seem to take place within the ant-hill, and we have observed scouts posted all around ready to discover and carry back to the colony as many fertile females as they could meet with. It is probable that, soon after pairing, the males die, as do the males of bees and other insects; for, as the workers never bring any of them back, nor take any notice of them after leaving the ant-hill, they must perish, being entirely defenceless, and destitute both of a sting and of mandibles to provide for their subsistence. The subsequent proceedings of females are very different, and of curious interest. It was supposed by the ancients that all Ants, at a certain age, acquired wings; but it was reserved for the younger Huber, in particular, by means of his artificial formicaries, to trace the development of the wings in the female from the first commencement, till he saw them strip off and laid aside like cast clothes."

"Having directed my close attention to the eggs of ants," says Huber, "I remarked that they were of different sizes, shades, and forms. The smallest were white, opaque, and cylindrical; the largest transparent, and slightly arched at both ends; while those of a middle size were semi-transparent. On holding them up to the light, I observed a sort of white oblong cloud; in some, a transparent point might be remarked at the superior extremity; in others, a clear zone above and underneath the little cloud. There were some whose whole body was so remarkably clear as to allow of my very distinctly observing the rings. On fixing attention more closely upon the latter, I observed the egg open, and the grub appear in its place. Having compared these eggs with those just laid, I constantly found the latter of a milky whiteness, completely opaque, and smaller by one half, so that I had no reason to doubt of the eggs of ants receiving a very considerable increase in size; that in elongating they become transparent, but do not at this time disclose the form of the grub, which is always arched." When the eggs are at length hatched, the young grubs are fed either by the neuters (called also nurse-ants and workers) when any of these are in the colony, and by the mother when she is alone, by a liquid disgorged from the stomach, as is done in a similar way by wasps, humble-bees, and certain birds.

"When the larvæ have attained their full growth they spin a silken covering, called by entomologists a cocoon; in this they completely enclose themselves, and remain perfectly quiescent without receiving any nutriment, awaiting the final change when they are to assume the form of Ants. This stage of its existence is the pupa, but is commonly though very erroneously called the egg. Ants' eggs, as they are vulgarly called, are a favourite food for partridges and pheasants, and are eagerly sought after by persons who rear these birds from the egg. The cocoon containing the pupa is of a long cylindrical form, of a dirty white colour, and perfectly without motion. The pupa within the cocoon has now attained the form which it will finally possess; its limbs are distinct, but want strength and consistence, and are covered by a skin which has yet to be cast. In colour it changes from white to a pale yellow, then to red, and finally becomes almost black; its wings, if a male or female, are distinctly visible, but do not assume the shape, size, or character, they are hereafter destined to bear." — *Newman's Hist. of Insects.*

In England, ant-hills appear formed and arranged with very little regard to order or regularity; but in the more southern parts of Europe they are constructed with amazing ingenuity. They are generally formed in the vicinity of some large tree on the bank of a river; the former for the purpose of securing food, and the latter for supplying them with that abundant moisture which is requisite for the use of these insects. The ant-hill is of a conical shape, and is composed of leaves, bits of wood, sand, earth, stubble, gum, and grains of corn; all united into a compact body, perforated with galleries down to the bottom, and having a variety of tunnels or passages throughout the interior, the number of these avenues depending entirely on the population and extent of the nest. At its commencement the nest is simply an excavation made in the earth; a number of the labourers wander about in quest of materials suitable for the superstructure; others carry out particles of earth from the interior, and these particles, interspersed with the fragments of wood and leaves brought in continually from every

but a careless heap, it is in re- ingenious device for keeping out ending the effects of the wind, acks of enemies; and yet more r receiving and husbanding the ture. There are external aper- mit free egress to the multitude of which the commonwealth is and from the commencement of eason they are constantly em- the unpropitious winter again eir exertions, and terminates industry.

ing Ants are not only employed the idlers at home, but in pro- ient food for themselves. They arious provisions, both animal ble; killing and devouring all cts, as well as in seeking ripe hatever appears to contain suc- ter. When they are unable to ale of the substance they have r devour what they can; and, rest in pieces, load themselves poil. When they meet with an s they are singly incapable of several of them join in the at- struction generally follows, each g in carrying away a portion of When a single Ant chances to mate discovery, it immediately es the information to others, ole republic soon appear in mo- while they are thus busied in oad, and carrying in provisions of those which continue inactive ay are by no means unmindful . The female Ants soon begin r eggs, which are immediately he safest situation, at the bottom where they are assiduously de- he labourers, who always display attachment to the rising progeny, ding to the safety of the larvæ, g the newly born insects. Who, not seen them, when the gardener midable enemy has demolished habitation, affectionately soli-

as closely as possible, following them to the extreme tip of every blade of grass; and when at length those possessed of wings spread them in preparation for flight, the labourers will often hold them back, as if loath to trust them alone. . . . When the air is warm and still they rise in thousands, and sailing, or rather floating on the atmosphere, leave for ever the scene of their former existence. Each female, immediately on alighting from her aerial voyage, examines the situation in which chance has placed her, and if she find it adapted to her purpose, she turns her head back over her shoulders, and with her sharp mandibles tears off the wings which bore her from the place of her nativity. Strange as this propensity may seem, it is dictated by an unerring instinct, for the object for which wings were given her is now accomplished, and henceforth they would prove an incumbrance, and retard rather than assist, the performance of her duties. Sometimes a few workers, wandering at this period of excitement far from their home, may happen to meet with her, and if so, they unite their labours with hers in excavating a small and humble dwelling in the earth, which serves as the nucleus of a future colony; in all operations the female, now a queen, takes a most energetic part, and continues to labour until she has laid eggs, when the conduct of the workers undergoes a great change, for they now treat her with the most marked respect, and consider her worthy the honours of a sovereign.

The ingenious author we before quoted gives a very curious account of what he terms the *Slave Ants*, which in substance is as follows: The most remarkable fact connected with the history of Ants, is the propensity possessed by certain species to kidnap the workers of other species, and compel them to labour for the benefit of the community, thus using them completely as slaves; and, as far as we yet know, the kidnappers are red or pale-coloured Ants, and the slaves, like the ill-treated natives of Africa, are of a jet black. The time for

scouts having discovered the object of their search, return to the nest and report their success. Shortly afterwards the army of Red Ants marches forth, headed by a vanguard, consisting of only about eight or ten Ants, which is perpetually being changed,—the individuals which constitute it, when they have advanced a little before the main body, halting, falling into the rear, and being replaced by others. When they have arrived near the Negro colony, they disperse, wandering through the herbage, and hunting about, as if aware that the object of their search was near, though ignorant of its exact position. At last they discover the settlement, and the foremost of the invaders rushing impetuously to the attack, are met, grappled with, and frequently killed by the negroes on guard: the alarm is quickly communicated to the interior of the nest; the negroes sally forth by thousands, and the Red Ants rushing to the rescue, a desperate conflict ensues, which, however, always terminates in the defeat of the negroes, who retire to the innermost recesses of the habitation. Now follows the scene of pillage: the Red Ants with their powerful mandibles tear open the sides of the negro ant-hill, and rush into the heart of the citadel. In a few minutes each of the invaders emerges carrying in its mouth the pupa of a worker negro, which it has obtained in spite of the vigilance and valour of its natural guardians. The Red Ants return in perfect order to their nest, bearing with them their living burdens. On reaching the nest the pupæ appear to be treated precisely as their own, and the workers when they emerge perform the various duties of the community with the greatest energy and apparent good-will. [For an account of the *White Ants*, which belong to a totally different order of insects, see TERMITES. See also DRIVER ANTS.]

The following short passage from Mr. Darwin's Observations on the Natural History of Rio de Janeiro will give the reader a good idea of the magnitude of the Ants' nests there: "Travelling onwards, we passed through tracts of pasturage, much injured by the enormous conical Ants' nests, which were nearly twelve feet high. They gave to the plain exactly the appearance of the mud volcanoes at Jorullo, as figured by Humboldt." And in Gardner's Travels in Brazil we read the following remarks on the immense multitudes of Ants which are found there. "When near Rio de Janeiro," he says, "we passed many habitations belonging to poor people of colour, mostly fishermen. Before reaching the foot of the mountain over which the road leads to Tijuca, we passed a migrating body of small Black Ants. The immense number of individuals composing it may be imagined from the fact, that the column was more than six feet broad, and extended in length to upwards of thirty yards. The ground was completely covered with the little creatures, so closely were they packed together." The species also are more numerous than naturalists are aware of: he says that near Pernambuco *he noticed more than 25 different species.*

ANT-EATER. (*Myrmecophaga.*) A genus of animals, of the Cuvierian order *Edentata*. Their distinguishing characteristics are, that the body is covered with hair, the mouth is small, and the tongue long and cylindrical, calculated to supply the want of teeth, from being covered with a glutinous saliva, by means of which they entrap and devour the insects upon which they live and from which they derive their name. The head is very long, but the tongue is much longer, and capable of being extended to a surprising distance beyond the snout; the eyes are particularly small, the ears short and round, the legs thick and strong, but most unfavourably formed for locomotion, and consequently their pace is remarkably slow. There are three distinct and well-defined species in South America; and these, with one or two others, we shall briefly describe.

The GREAT ANT-EATER, or ANT-BEAR (*Myrmecophaga jubata*), is by far the largest of the Ant-eaters, and is covered with long, coarse, shaggy hair, except the head, where it is short and close; it has a very long and slender head, and a bushy black tail of

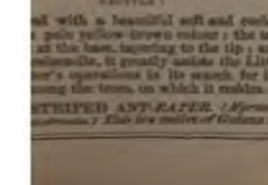
GREAT ANT-EATER. — (MYRMECOPHAGA JUBATA.)

enormous size and length, the whole animal often measuring eight feet from the tip of the snout to the extremity of the tail. Being plantigrade, it stands lower on the hind legs than before, which is the case with bears and other quadrupeds similarly formed. It has four toes on the fore-feet, the second and third being provided with long, sharp-pointed, and trenchant claws; so that nothing upon which it has an opportunity of fastening can escape. The hind feet have five toes, furnished with short weak claws, resembling those of ordinary quadrupeds. The prevailing colour of this animal is a deep grey, with a very broad band of black running from the neck downwards on each side of the body; its habits are slothful and solitary; and it sleeps during the greater part of the day. It lives exclusively on ants, to procure which it opens their hills with its powerful crooked claws, and draws its long flexible tongue, which is covered with glutinous saliva, lightly over the swarms of insects who flock from all quarters to defend their dwellings. It is a native of Brazil and Guiana. It seems almost incredible that so robust and powerful an animal can procure sufficient sustenance from Ants

...nt this circumstance has nothing ...r those who are acquainted with ...al parts of America, and who have ...enormous multitudes of these in... ...th swarm in all parts of the country ...egions, that their hills often almost ...another for miles together. The ...mort of the Great Ant-eaters are ...mmon savannahs, along the banks ...nd sluggish pools.

...AMANDUA (*Myrmecophaga tamandua*) is a smaller kind of Ant-eater, is ...ize of a full-grown cat; the head ...so disproportionately long as the ...ove described, though it is of the ...eral cylindrical form, and equally ...at the end. The conformation of ...nities, and the number of the toes ...y respect the same as in the Great ...; but the tail is prehensile, which ...essentially an arboreal quadruped; ...ead of having long shaggy hair, it ...shining, and somewhat silky, like ...wool. There are several varieties ...species, differing chiefly in colour; ...do exclusively on trees, living ...on, honey, and (according to Azara, ...ural History of the Quadrupeds ...ay), bees, which in these coun... their hives among the loftiest ...of the forest, and, having no sting, ...y despoiled of their buried treasure.

...TTLE ANT-EATER (*Myrmecophaga*) is an animal of considerable ...and not larger than a squirrel; ...is small, the snout sharpened and ...ent downwards; the fore-feet have ...claws on each, the exterior one ...ger and stronger than the interior; ...are very small, and hid in the fur; ...are also small. The whole animal



ANT-EATER.—(*Myrmecophaga tetradactyla.*)

...ed with a beautiful soft and curled ...pale yellow-brown colour; the tail ...at the base, tapering to the tip; and ...ensemble, it greatly assists the Little ...er's operations in its search for in... ...among the trees, on which it makes

...STRIPED ANT-EATER. (*Myrmecophaga tridactyla.*) Also two species of Guiana: it is about twenty inches long from the tip of its snout to the end of its tail; the snout is taper, the upper mandible extending very far beyond the lower; the body and tail are of a tawny colour, with the under parts white; the body marked with broad, distant, black-ish, transverse stripes, and the tail annulated with similar ones. [For SPINE ANT-EATER, see ECHIDNA.]

ANTELOPE. (*Antilope.*) A genus of hollow-horned Ruminants, of which there are many species, each differing from the other in some important points, but agreeing in the grand leading characteristics. Thus,

SKULL OF ANTELOPE

speaking generally, it may be said, that *Antelopes* are of graceful and symmetrical proportions; of a restless and timid disposition, extremely watchful, of great vivacity, remarkably swift and agile, and most of their bounding is inconceivably light and elastic. Their horns, whatever shape they assume, are round and annulated; in some species straight, in others curved and spiral; in some the females have no horns, in others they are common to both sexes. They all possess a most delicate sense of smell; their eyes are proverbially bright and beaming; and so fleet are they, that the huntsman is often obliged to call in the aid of the falcon, trained for the purpose, to seize on the animal and arrest its progress, in order to give the greyhounds an opportunity of overtaking it. Their hair is generally short and smooth, and of an equal length over every part of the body; some species, however, have manes on the neck and shoulders; and a few are furnished with long hair on the chin and throat. The ears are long and pointed; the tails short, and tufted at the extremity. For the most part Antelopes are gregarious, some species forming herds of two or three thousand, while others keep in pairs, or in companies of five or six. They often browse like the goat, and feed on the tender shoots of trees; and the flesh of those which are taken in the chase is usually of excellent flavour.

The *Antilopidæ* seem to be a connecting link between the Goat and the Deer. Like the goat, they never shed their horns; but, on the other hand, their size and the delicacy of their conformation, the nature and colour of the hair, their fleetness, &c., are striking points of resemblance to the deer tribe. The hind legs, like those of the hare, being

longer than the fore ones, not only give additional swiftness, but greater security, in ascending and descending precipices, a practice in which the Antelope greatly delights. The majority of the species are brown on the back, and white under the belly, with a black stripe separating those colours. The tail is of various lengths, but always covered with pretty long hair; and the ears, which are beautiful and well placed, terminate in a point. The hoof is cloven, like that of the sheep; and the horns are perennial. The length, size, and turn of the horns, the different spots in the skin, or diversities of size, constitute the chief distinctions which mark the several species. They mostly inhabit the torrid regions, or such parts of the temperate zone as are nearly contiguous, frequenting the cliffs and ledges of rocks, or traversing vast untrodden wildernesses. Africa appears to be their great nursery, but many kinds are natives of Asia; very few are met with in Europe; and it is remarkable that, notwithstanding the warmth of South America is well suited to their nature, only a single species of Antelope is to be found in any part of the New World.

Having made these general remarks, it is necessary, for the sake of perspicuity, to consider Antelopes as divided into sub-genera, or families. It has been customary to class them as follows:—1. True Antelopes; 2. Bush Antelopes; 3. Capriform (or goat-like) Antelopes; and 4. Bovine (or ox-like) Antelopes. But some late writers on zoology have rendered the sub-division infinitely more minute; the species in many instances closely bordering on each other, while there are others in which scarcely any corresponding features can be distinctly traced. Thus, as an eminent naturalist has remarked, "the genus Antelope has become a kind of zoological refuge for the destitute, and forms an incongruous assemblage of all the hollow-horned ruminants together. So diversified are its forms, and so incongruous its materials, that it presents not a single character which will either apply to all its species, or suffice to differentiate it from conterminous genera."

The COMMON ANTELOPE, or SASIN. (*Antilope Cervicapra.*) This elegant specimen of the Antelope tribe is a native of many parts of Africa, and also of India. It is somewhat smaller than a fallow deer, and is remarkable for the peculiar beauty of its long spiral horns, which are distinctly marked by numerous prominent rings; its colour is a reddish tawny brown above, and white below; the legs are long and delicate, the body round, but light and well formed; the eyes large and expressive, and their orbits white. They are extremely wary, and when feeding or lying down are guarded by sentinels, who give the alarm on the slightest appear nce of danger; and such is their fleetness and activity, that they often vault over nets ten feet high, and when pursued, will pass over as many yards at a single bound. (See SPRINGBOK, PRONGBUCK, GNU, GAZELLE, KOODO, STEENBOK, NYLGHAU, &c.)

COMMON ANTELOPE.—(ANTILOPE CERVICAPRA.)

ANTHICIDÆ. A tribe of Coleopterous insects, possessing simple or but slightly serrated and filiform antennæ; the maxillary palpi are terminated by a hatchet-shaped joint; and the penultimate joint of the tarsi is bilobed. Some of these species are found upon plants, but the majority live on the ground, and run with great quickness: their larvæ are probably parasites. They compose the genera *Notoxus*, *Anthicus*, &c.

ANTHICUS LATERI FUNCTATUS

ANTHOBII. A section of Coleopterous insects, composed of species inhabiting the southern parts of Europe and the warm parts of both hemispheres. They are distinguished by the two divisions of the lower lip being produced considerably beyond the mentum, and the elytra gaping at the tips, which are rounded; the antennæ have nine or ten joints, the last three composing the club; the terminal lobe of the maxillæ is membranous, silky, and pencil-like, but leathery in others; the upper lip and mandibles are more or less solid, as they are more or less exposed. These insects live upon flowers or leaves.

ANTHOCHÆRA. A genus of birds belonging to the family *Meliphagidæ*, or Honey-eaters, several species of which are found in New Holland. As an example of this interesting genus we give

The ANTHOCHÆRA MELLIVORA, or BUSH WATTLE-BIRD; a bird constantly found where there are Banksias, in New South Wales, South Australia, and Van Diemen's Land. It is bold and spirited, fearlessly attacking and driving away all other birds from the part of the tree on which it is feeding. In spring and summer the male perches on some elevated branch, and screams forth his harsh and peculiar notes,—like a person vomiting,—whence its local

BROWN WATTLE-BIRD.
(ANTHOCHERA MELLIVORA.)

...-pour-rock, in which the natives ...d to imitate it. While thus em... frequently jerks its tail, throws ...ead, and distends its throat, as if ...rtion were required. It breeds in ...r and three following months: the ...and, open, and rather small; it is ... placed in the fork of a small ...nd is formed of fine twigs, lined with ...ss. Eggs two, and sometimes three. ...s are in blossom the greater part ...ear; each flower as it expands is ... examined by the Wattle-bird, ...erts its long feathery tongue into ...t, extracting pollen and insects. ... observed that Banksias are not a ...od land, so that the garrulous note ...ndes may be taken by the settler ...ication of the sterile and unprofit...ss of the soil. (*Gould's Birds of* ...)

...OMYZIDÆ. A general division ...ozidæ, composed of species having ...rance of Common Flies; the wings ...ile; the antennæ inserted near the ... always shorter than the head, ter... by a long or linear joint, with the ...ly plumose; the legs are of mode... and the abdomen composed of four

...OPHILA. A name given by La... the fourth family of the Aculeated ...tera (the Bees).

...ROCERIDÆ. A family of Lepi... insects, of the section *Heterocera*; ...g a rather numerous group of small ...inly sized species, distinguished by ...llancy of colour and diurnal flight; ...e antennæ never terminated by a ... hairs, and either simple in both ...l fusiform, or thickened near the ... the head is furnished with a pair of ...ind the antennæ; the labial palpi ...r small, and the maxillæ greatly ...; the wings are always deflexed in ...hibiting in many species a number ...ded spots; the nervures are very ...; the legs are long, with the pos...ia furnished with four spurs. The ...ies are of a cylindrical form, gene...hed with short hairs, and without ... at the hind part of the body; they ...ious leguminous plants, and con-siderably resemble those of several of the *Bombycidæ*. The pupæ are of the ordinary conical form, without any angular prominences. The colouring of some of the exotic species of this family is truly beautiful. [See BURNET MOTH.]

ANTHUS. [See PIPIT.]

ANTIPATHES. Black Coral.

ANT-LION. (*Myrmeleon formicalea.*) A Neuropterous insect which has long been celebrated for its wonderful ingenuity in preparing a kind of pitfall for the destruction of such insects as happen unwarily to enter it. In its complete or fly state it bears no inconsiderable resemblance to a small dragon-fly, from which however it may readily be distinguished by its antennæ, which are hard, and incurvated at the ends. It

ANT LION.—(MYRMELEON FORMICALEO.)

deposits its eggs in dry sandy situations, and the young larvæ, when hatched, begin separately to exercise their talent of preparing a very small conical cavity in the sand, which they effect by turning themselves rapidly round. Under this cavity it lies concealed, ready to rush forward at a moment, in order to seize any small insect that has been so unfortunate, in approaching the edge, as to fall in; and no sooner has it sucked out the juices of its victim through its tubercular forceps, than it throws it by a sudden exertion to some distance. As the larva increases in size, it enlarges the hole, which at last becomes about two inches in diameter, its own length being when full-grown about half an inch. It is of a flattened figure, broad towards the upper part, and gradually tapering to an obtuse point: the legs are slender; the head and thorax rather small; the tubular jaws long, curved, serrated internally, and very sharp-pointed: it is of a brown colour, beset with numerous tufts of dusky hair; the whole presenting a form bearing some resemblance to a flat-bodied spider. In preparing its pit, it begins by tracing an exterior circle of the intended diameter of the cavity, continuing its motion, in a spiral line, till it gets to the centre, thus making several volutes in the sand, resembling the impression of a large helix or snail-shell; and after having sufficiently deepened the cavity by a repetition of this motion, it smoothes the sides into a regular shape by throwing out the superfluous sand lying on the ridges, which it effects with surprising address and dexterity.

The ingenuity and perseverance of this insect, or rather the admirable instinct it displays, is so amusingly described by Messrs. Kirby and Spence in their "Introduction to

Entomology," that we cannot refrain from indulging in a quotation, the length of which, we trust, its pertinence may well excuse. "In the course of its labours it frequently meets with small stones: these it places upon its head, one by one, and jerks over the margin of the pit. But sometimes, when near the bottom, a pebble presents itself of a size so large that this process is impossible, its head not being sufficiently broad and strong to bear so great a weight, and the height being too considerable to admit of projecting so large a body to the top. A more impatient labourer would despair; but not so our insect. A new plan is adopted. By a manœuvre, not easily described, it lifts the stone upon its back, keeps it in a steady position by an alternate motion of the segments which compose that part; and, carefully walking up the ascent with the burthen, deposits it on the outside of the margin. When, as occasionally happens, the stone is round, the labour becomes most difficult and painful. A spectator watching the motions of the ant-lion feels an inexpressible interest in its behalf. He sees it with vast exertion elevate the stone, and begin its arduous retrograde ascent: at every moment the burthen totters to one side or the other: the adroit porter lifts up the segments of its back to balance it, and has already nearly reached the top of the pit, when a stumble or a jolt mocks all its efforts, and the stone tumbles headlong to the bottom. Mortified, but not despairing, the Ant-Lion returns to the charge; again replaces the stone on its back; again ascends the side, and artfully avails himself, for a road, of the channel formed by the falling stone, against the sides of which he can support his load. This time possibly he succeeds; or it may be, as is often the case, the stone again rolls down. When thus unfortunate, our little Sisyphus has been seen six times patiently to renew his attempts, and was at last, as such heroic resolution deserved, successful. It is only after a series of trials have demonstrated the impossibility of succeeding, that our engineer yields to fate, and, quitting his half-excavated pit, begins the formation of another.

"When all obstacles are overcome, and the pit is finished, it presents itself as a conical hole rather more than two inches deep, gradually contracting to a point at the bottom, and about three inches wide at the top. The Ant-lion now takes its station at the bottom of the pit, and, that its gruff appearance may not scare the passengers which approach its den, covers itself with sand, all except the points of its expanded forceps. It is not long before an ant on its travels, fearing no harm, steps upon the margin of the pit, either accidentally or for the purpose of exploring the depth below. Alas! its curiosity is dearly gratified. The faithless sand slides from under its feet; its struggles but hasten its descent; and it is precipitated headlong into the jaws of the concealed devourer. Sometimes, however, it chances that the ant is able to stop itself midway, and with all haste scrambles up again. *No sooner does* the Ant-lion perceive this (*for, being furnished* with six eyes on each side of his head, he is sufficiently sharp-sighted), than, shaking off his inactivity, he hastily shovels loads of sand upon his head, and vigorously throws them up in quick succession upon the escaping insect, which, attacked by such a heavy shower from below, and treading upon so unstable a path, is almost inevitably carried to the bottom. The instant his victim is fairly within reach, the Ant-lion seizes him between his jaws, which are admirable instruments, at the same time hooked for holding and grooved on the inner side, so as to form with the adjoining maxillæ, which move up and down in the groove, a tube for sucking, and at his leisure extracting all the juices of the body, regales upon formic acid. The dry carcass he subsequently jerks out of his den, that it may not encumber him in his future contests, or betray the 'horrid secrets of his prison-house:' and if the sides of the pit have received any damage, he leaves his concealment for a while to repair it; which having done, he resumes his station."

Such is the mode of life pursued by the larva of the Ant-lion until nearly two years have elapsed, when, being arrived at its full growth, and ready to change into a chrysalis, it envelopes itself in a round ball of sand, agglutinated and connected by very fine silk, which it draws from a tubular process at the extremity of its body. In this silken cocoon it remains about three weeks; and then bursts forth a four-winged insect, resembling the dragon-fly both in appearance and manners. The *Myrmeleon formicaleo* is not found in England, but occurs in many parts of the Continent, as France, Spain, Germany, &c. [See MYRMELEON.]

APATURA IRIS, or PURPLE EMPEROR. Of all our native Lepidoptera, there is no Butterfly that is more justly admired than the Purple Emperor. In its

PURPLE EMPEROR.—(APATURA IRIS.)

bold and soaring flight, as it displays its beautiful lines in the effulgence of the meridian sun, or as it settles for repose when the shades of evening approach, it still maintains its acknowledged pre-eminence. The general colour of the wings above is a rich deep brown, changing in the male according to the light, to a lovely purple, or a splendid mazarine blue, and relieved by a triple series of white spots. The posterior wings have a white angular band, placed in continuity with the first series of spots on the anterior wings; and an ocellus at the anal angle with a narrow tawny iris and black pupil: the under surface of the anterior wings is a fur-

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ours hue. The perfect insect
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ance; and in various parts of
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are often taken. — There are
f the genus *Apatura*, but the
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ous.) The words APE, MON-
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to any of the Quadrumanous
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, may be properly divided
es; viz.—*Apes*, or such as are
ail: *Baboons*, or such as have
ss, elongated muzzles, and
re usually short: *Monkeys*,
in general long: and *Sapa-*
s with *prehensile* tails, which
e be twisted round any object,
many instances answer the
additional hand to the animal.
to the first of these only that
s in this place to be directed.
ape (*Pithecus*) comprises those
animals which most closely
e human species in anatomi-
and which, in popular lan-
ed monkeys without tails or
s. As Buffon justly observes
they are not quadrupeds, but
not four-footed, but four-
ds. They chiefly inhabit the
India and Africa, and are un-
peninsula of Malacca, and the
of the Indian Ocean; living in
ling on fruits, leaves, and in-
ugh frugivorous in a state of
from the resemblance of their
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their diet may be almost as
of Man. They generally live
some of the species are said to
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APHANIPTERA. An order of Apterous Haustellate insects, having rudimental elytra or wings in the perfect state. It is composed entirely of the different species of Fleas, forming the family PULICIDÆ; the common Flea (*Pulex irritans*) being the type of the order. The legs are long, the posterior formed for leaping; the coxæ are very large; the fore legs are singularly placed, appearing to arise from the front of the head, the coxæ defending the sides of the rostrulum. This peculiarity is caused by the prothoracic epimera being detached from the body, and extended obliquely beneath the head: the femora are short, but strong; the tibiæ very setose; and the tarsi five-jointed, terminated by a pair of strong claws. The female flea deposits a dozen eggs, of a white colour, and rather viscous texture, from which are hatched long worm-like grubs, destitute of feet, which are very active in their motions, winding themselves in a serpentine manner through the substance in which they may be deposited: the head of the larva is protected by a firm skin, and bears two antennæ, but no eyes. The body consists of thirteen segments, bearing little tufts of hair, and the last is armed with a pair of small hooks. When full grown, which occurs in summer in about twelve days, the larvæ enclose themselves in a small cocoon of silk, often covered with dust, and attached to adjoining substances: in this it passes into the pupa state, and in about twelve days more emerges a perfect flea.

In hot countries these insects are exceedingly troublesome: but in the West Indies and South America there is an insect belonging to the family having habits different to those of the common flea, which is even still more obnoxious; this is the Chigoe (*Pulex penetrans*), which lives in the open country, and attacks the naked feet both of men and dogs. [See FLEA and CHIGOE.]

APHIS: APHIDÆ. A genus and family of Homopterous insects, comprising the very numerous and obnoxious species of *Plant-*

crawling. The species reside in great societies upon almost every species of plant, of which they suck the young shoots, leaves, and stems, by the assistance of their proboscis, producing disease in the plant either by greatly weakening it, or by raising vesicles, or other gall-like excrescences, in which whole generations of Aphides reside. The anal tubercles above mentioned secrete a saccharine fluid of which ants are very fond; and it is this fluid dropped upon the adjacent leaves, or the extravasated sap flowing from the wounds caused by the punctures of the insects, which is known under the name of the *honey-dew*. In the spring they are viviparous, in the autumn and as winter approaches they are oviparous; and by a surprising aberration from the common laws of nature, it appears that one impregnation of the female is sufficient for many generations, without further assistance from the male. All the Aphides which appear in the spring are exclusively females, no males being found till the autumn; and the females are endowed with such astonishing fecundity, that nine generations—each generation averaging 100 individuals—have been produced within three months; "so that from a single Aphis, 10,000 million millions may be generated in that short period!" In some years they are so numerous as to cause almost a total failure of the hop plantations; at other times the beans, peas, and potatoes are injured by them to an alarming extent; as also are numerous shrubs, and plants, including the delicate exotics raised in stoves and green-houses. There are numerous species; uniformly deriving their specific name from the tree, shrub, or plant, on which they are commonly found. Of these the *Aphis rapæ*, which has made a great noise as the *Aphis vastator* and feeds on various plants, the *Aphis rosæ* (or rose louse), the *Aphis humuli* (or hop-fly), and the *Aphis vitis* (or vine-fretter), are among the best known and most destructive; but the largest and most remarkable of the British Aphides is the *Aphis salicis*, which is found on the different kinds of willows, and is nearly a quarter of an inch long. Many of the species have the body densely clothed with a white cottony secretion, either in threads or flakes; among these may be particularly mentioned the *Aphis lanigera*, or *American blight*, as it is termed, which infests the stems of Apple-trees, sometimes totally destroying them.

PLANT-LICE.—(APHIS PLATANOIDES.)

"The injuries occasioned by plant lice," as Dr. Harris very truly observes, "are much greater than would at first sight be expected from the small size and extreme weakness of the insects; but these make up by their numbers what they want in strength individually, and thus become formidable enemies to vegetation. By their punctures, and the quantity of sap which they draw from the leaves, the functions of these important organs are deranged or interrupted, the food of the plant, which is there elaborated to nourish the stem and mature the fruit, is withdrawn before it can reach its proper destination, or is contaminated and left in a state unfitted to supply the wants of vegetation. Plants are differently affected by these insects. Some wither and cease to grow, their leaves and stems put on a sickly appearance and soon die from exhaustion. Others, though not killed, are greatly impeded in their growth, and their tender parts, which are attacked, become stunted, curled, or warped. The punctures of these lice seem to poison some plants, and affect others in a most singular manner, producing warts or swellings, which are sometimes solid and sometimes hollow, and contain in their interior a swarm of lice, the descendants of a single individual, whose punctures were the original cause of the tumor. I have seen reddish tumors of this kind, as big as a pigeon's egg, growing upon leaves, to which they were attached by a slender neck, and containing thousands of small lice in their interior. Naturalists call these tumors galls, because they seem to be formed in the same way as the oak-galls which are used in the making of ink. The lice which inhabit or produce them generally differ from the others, in having shorter antennæ, being without honey-tubes, and in frequently being clothed with a kind of white down, which, however, disappears when the insects become winged."

Mr. Knapp, in his 'Journal of a Naturalist,' has thus described this species, and its effects. "Our apple-trees here are greatly injured, and some annually destroyed, by the agency of what seems to be a very feeble insect. We call it, from habit, or from some unassigned cause, the 'American blight.' (It seems, however, that it had been noticed in England as early as the year 1787; and there is good reason to believe that in America it is not indigenous, but was introduced there with fruit-trees from Europe.) In the spring of the year a slight hoariness is observed upon the branches of certain species of our orchard fruit. As the season advances this hoariness increases, it becomes cottony; or, in other words, towards the end of summer the under sides of some of the branches are invested with a thick, downy substance, so long as at times to be sensibly agitated by the air. Upon examining this substance, we find that it conceals a multitude of small wingless creatures, which are busily employed in preying upon the limb of the tree beneath. This they are well enabled to do, by means of a beak termina-

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t of the subject, Dr. Harris
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d earth around the bottom
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pose the genus COCCINELLA (or Lady-birds).

APHODIADÆ. A family of minute Lamellicorn beetles, extremely abundant in this and other temperate countries, especially during the spring months, swarming in the dung of the larger herbivorous animals, or hovering over it as soon as it is dropped. The body is of an oblong or oval shape, rounded at the extremity, with the abdomen entirely concealed by the elytra: they are nearly allied to the Scarabæidæ, both in their antennæ, organs of the mouth, and legs, but the body is more elongated.

APHRODITA, or SEA-MOUSE. A small marine annelide, known on our coasts as the Sea-mouse. Its figure is oval and aculeated; and it is covered with a large quantity of silky hairs of a very bright metallic lustre, the colours of which vary with the play of the light. On the back are two rows of large membranous scales, which somewhat resemble the elytra of insects. In many species the lateral setæ or bristles exhibit a beautiful structure, being barbed on each side of the tips, and each of these barbed setæ being inclosed in a smooth horny sheath. It not unfrequently happens that a large number of Aphroditæ are thrown up on the British shores after a gale of wind.

APHROPHORA. A genus of Homopterous insects which in the larva state live on plants enveloped in a saliva-like mass; whence their popular name of *Cuckoo-spits*: the insects in their perfect state are named from their leaping powers, *Frog-hoppers*. [See CICADA.]

arrangement compiled by Mr. Westwood, we find the APIDÆ are divided into five sub-families:—

1. PANURGIDÆ, consisting of insects nearly allied to the Andrenidæ in the labium being shorter than the mentum, and the structure of the labial palpi, which are composed of continuous linear joints, the two basal ones not being so much elongated as in the following sub-families. The maxillary palpi are six-jointed; the upper lip is short; and the females are destitute of a pollen brush on the under surface of the abdomen. They are, however, furnished with a pollen plate on each side of the metathorax, and another on the posterior femora: the hind legs have also pollen brushes. Nothing is known of their nidification; but Latreille observes that the perfect insects of the genus *Panurgus* are attached to semi-flosculous flowers.

2. DENUDATÆ, or MELECTIDÆ. The insects composing the second sub-family (as well as those of all the following sub-families of bees) have the labial palpi formed of two very long, flattened, scaly basal joints, and two minute apical ones. The abdomen is not provided with a ventral pollen brush, neither do these insects possess any pollen plates, their bodies being in effect naked, whence they are supposed to be parasites. Some of the species resemble small wasps in their colours, whilst in others some parts of their bodies are clothed with small patches of very short hairs. From their evidently parasitic habits they have been termed Cuckoo-bees.

3. LONGILABRES, or MEGACHILIDÆ. The third sub-family of the Apidæ; composed of insects distinguished by the large oblong form of the upper lip, and strong mandibles: the maxillary palpi are but slightly developed; while on the contrary, the labial are very long, with the two last joints obliquely inserted. Nearly all the genera are polliniferous, the pollen brush being very large, and covering the under side of the abdomen: they are, however, destitute of pollen plates. "From their respective economy, they have been termed Mason and Upholsterer bees; the former building their nests of fine moistened earth, whilst the Upholsterers employ in the construction of their cells portions of leaves which they have cut from various plants by means of their powerful jaws, which are employed like a pair of scissors." Some of the species of the genus *Osmia* construct their nests of minute grains of sand, cemented together with a glutinous secretion, and which are placed by the insects on the angle of a wall, the crevices between bricks, &c. The genus *Megachile* comprises the Leaf-cutting and some other bees. These form their nests in the trunks of decayed trees, and in old rotten palings. They are lined with pieces of leaves, of a circular form, which the insects have most dexterously clipped off, and afterwards adjusted together so admirably, that, although not covered with any coating of gum, &c., they are honey-tight.

4. SOCIALITÆDES. This sub-family derives *its name from the very thick coating of hairs upon the hind legs of the females*, which constitute the pollen brushes. The wi have commonly three perfect submargi cells; the third joint of the antennæ is of long and clavate, and the mouth is oc sionally very considerably developed. N withstanding the shortness of the wings, the robustness of the body, these insects with great strength and rapidity, makin loud humming noise. They nidificate in crevices of old walls or in the ground, p ferring banks exposed to the sun.

"We are indebted to Reaumur," as gentleman observes, "for the history of Carpenter bees, *Xylocopa*, a genus conta ing the largest species of the family, al which are exotic. Their wings are of black, with a fine purple or violet gloss, some of the species are richly coloured. females of *Xylocopa violacea* appear in spring, and select posts, palings, espali &c. in gardens, in which they construct th burrows, from twelve to fifteen inches length, and rather more than half an i in diameter; the top and bottom of tunnel is curved, having a passage at e end. When completed, they deposit an at the bottom, with a proper supply of pol paste; the whole is then covered with layer of agglutinated sawdust, formed d ing the construction of the burrow: layer thus formed serves not only as roof of one cell, but as the floor of anot which is placed immediately above it. T thus proceed till about a dozen cells formed. When the larvæ are full gro they assume the pupa state, head downwa so as to allow the lowermost and oldest make its way out of the bottom of the burr as soon as it becomes winged, and wh consequently takes place earlier than those which occupy the upper cells."

5. SOCIALES. The fifth and last sub-fam of the Apidæ. "Here, dependent up their social habits, we find each species co posed of three kinds of individuals; males, females, and neuters, or workers. addition to their gregarious habits, the c cumstances of the larvæ being fed from t to time by the worker bees, and the ce being generally of an hexagonal form, th are also distinguished by their peculiar ha of secreting wax for the manufacture of cells of their nests. In these insects, outside of the posterior dilated tibiæ smooth, and hollowed in the neuters int shining plate, for the reception and carryi of pollen, which has been accumulated means of the pollen brushes upon the ha joint of the tarsi of this pair of legs. T maxillary palpi are minute and exarticula These bees have the body covered with thi hairs."

"The Humble bees, composing the ge *Bombus*, are at once known by their la and very hairy bodies: they are the larg species of the Mellifera found in Englan and they are often of a black colour, wi bands of yellow or orange. They fo societies consisting of about fifty or six individuals, occasionally, however, amou ing to two or three hundred. They constr their dwellings under ground, in meadow pastures, or hedge-rows, generally emplo

r this purpose. Their union, how-
only till the cold weather kills
ness of the inhabitants, a few im-
females alone surviving to become
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ope, and which has also been
the U. S. of America and
nd; *Apis ligustica* (Spinola),
arts of Italy; *Apis fasciata*
t and some parts of Asia
nicolor (Fab.), in Madagas-
a (Linn.), at Bengal; *Apis*
.), at Senegal. Lacordaire
es of an undescribed species
he Horticultural Society of
, received a hive of bees
d, differing materially from
e, "being infinitely smaller
out stings." An interesting
tish Bees, by Mr. Frederick
shortly expected: in the
he has published much on

extensive genus of Coleopterous insects, deriving the name from their pear-shaped body. The grubs of many kinds of Apions destroy the seeds of plants. In Europe they do much mischief to clover in this way; but in America the species are more numerous and more destructive. *Apion Sayii* is a minute black species, not a tenth of an inch long, excluder sharp-pointed snout. Its grubs live in the pods of the common wild indigo bush, *Baptisia tinctoria*, devouring the seeds. A smaller kind, somewhat like it, inhabits the pods and eats the seeds of the locust-tree, or *Robinia pseudacacia*.—*Harris.*

APLYSIA. A genus of Tectibranchiate Mollusca, of which several species are known. The body of the animal consists of a soft fleshy mass; it has four flattened tentacular appendages; the mouth in the form of a vertical fissure, with two lateral labial plates, and a cordiform tongue beset with denticles; branchiæ covered by a sort of operculum; and shell wanting. From the borders of the mantle is poured out abundantly a deep purple liquor, with which the animal colours the water around to a considerable distance, when it perceives any danger. The *Aplysia depilans*, or Depilatory Aplysia, is found in the European seas adhering to rocks: it is extremely fetid, and it was long supposed that the acrid humour which it exuded occasioned the loss of the hair. Its digestive apparatus consists of a membranous crop, of enormous size, which leads into a muscular gizzard, furnished with pyramidal cartilaginous teeth; and a third stomach beset with pointed hooks; besides a fourth saculus. Its general colour is blackish, with grey or brown blotches, and tinged with purple. The ova is laid in long glairy entangled filaments, as slender as threads.

APODES or APODA. An order of fishes characterised by Linnæus as being composed of all those which are destitute of ventral fins. According to Cuvier's system, however, they must not only want ventral fins, but be likewise malacopterygious. Of this kind a good and familiar example is seen in the common Eel.

APOLLO [BUTTERFLY]. [See PAENASSIUS.]

APOSURÆ. The name given to a section of the Nocturnal Lepidoptera, differing from all the rest of the order in the caterpillars being destitute of any anal feet, the extremity of the body terminating in a point, which in many is forked, or furnished with two long articulated appendages, forming a kind of tail.

APPLE-MOTH. [See TORTRIX.]

ASPIDOPHORUS. The Armed Bullhead or Pogge. [See BULLHEAD.]

APTENODYTES. The generic appellation of the curiously-formed palmiped birds, known by the name of *Penguins*, a more general and detailed account of which will be found under the letter P. In this place we shall merely make an extract from Capt. Sir J. C. Ross's Voyage to the Antarctic Regions, where he speaks of the Great Penguins: "These enormous birds varied in weight from sixty to seventy-five pounds. The largest was killed by the Terror's people, and weighed seventy-eight pounds. They are remarkably stupid, and you are able to approach them so near as to allow you to strike them on the head with a bludgeon, and sometimes, if knocked off the ice into

the water, they will almost immediately leap upon it again as if to attack you, but without the smallest means either of offence or defence. They were first discovered during Capt. Cook's voyage to these regions, and the beautiful unpublished drawing of Forster the naturalist has supplied the only figures and accounts which have been given to the public, both by British and foreign writers on natural history. Mr. G. R. Gray has therefore named it in the zoology of our voyage, *Aptenodytes Forsteri*, of which we were fortunate in bringing the first perfect specimens to England. Some of these were preserved entire in casks of strong pickle, that the physiologist and comparative anatomist might have an opportunity of thoroughly examining the structure of this wonderful creature. Its principal food consists of various species of *cancri* and other crustaceous animals; and in its stomach we frequently found from two to ten pounds weight of pebbles, consisting of granite, quartz, and trappean rocks. Its capture afforded great amusement to our people, for when alarmed and endeavouring to escape, it makes its way over deep snow faster than they could follow it; by lying down on its belly and impelling itself by its powerful feet, it slides along upon the surface of the snow at a great pace, steadying itself by extending its fin-like wings, which alternately touch the ground on the side opposite to the propelling leg."

In No. IV. of the Appendix to the work above quoted, (the Geology of the Southern Islands, by R. Mc Cormick, Esq.,) the writer observes: "As I had no opportunity of landing for specimens, I was in the habit of examining the stomachs of most of the birds which I shot and preserved for the Government Collection; and found the Penguins my best geological collectors, for their crops were frequently filled with pebbles; more especially the large species, *Aptenodytes antarctica*. In one of these individuals I found upwards of a pound of small fragments of rocks; comprising basalt, greenstone, porphyry, granite, vesicular lava, quartz, scoriæ, and pumice; but none of them ever brought me a vestige of aqueous rocks,—all were volcanic,—and such the appearance of the Antarctic lands, even at a distance, would proclaim them to be. We saw three

ANTARCTIC PENGUIN
(APTENODYTES ANTARCTICA.)

species of Penguins within the Antarctic circle. The larger kind, 'Aptenodytes antarctica,' attains a great size. I preserved one, weighing seventy-five pounds. It is a scarce bird, generally met with singly; and I have never seen more [illegible] or three together; whilst the [illegible] congregate in vast [illegible] I know not to what cause we can [illegible] this very remarkable paucity of individuals in the larger species."

APTERA. An order of the Linnæan class *Insecta*; characterized, as the term implies, by having no wings in either sex. It includes the modern orders *Crustacea*, *Arachnida*, and *Myriapoda*.

APTERYX. A bird which in form somewhat resembles a Penguin, and stands about two feet in height. The beak is very long, slender, marked on each side with a longitudinal groove, and furnished with a membrane at its base. Its wings are simple rudiments; a mere stump, terminated by a hook. It has no abdominal air cells, nor are any of its bones hollow. The feathers have no accessory plume, but fall loosely, like those of the emu, and their shafts are prolonged considerably beyond the base.

WINGLESS EMU.—(APTERYX AUSTRALIS.)

The feet have a short and elevated hind-toe, the claw of which is alone externally visible. The eye is small, and a number of bristle-like hairs surround the mouth. Its colour is deep brown; its time of action nocturnal; and it subsists on insects. It runs with rapidity, the limbs are extremely powerful, and it defends itself vigorously with its feet. This bird is chiefly met with in the southern parts of the interior of New Zealand. When chased, it takes refuge in the clefts of rocks, hollow trees, or in deep holes which it excavates in the ground; and it runs with great swiftness, with its head elevated like the ostrich. The natives value it greatly for the sake of its skin, which, prepared with the feathers on, they make into dresses. The name given to this bird by the New Zealanders is *Kiwi*. A second species of this curious genus has been lately received by Mr. Gould from the South Seas.

APUS. A genus of small Crustaceous animals which inhabit ditches, lakes, and standing waters, generally in innumerable quantities. They often swarm in myriads, and, indeed, have been known to be carried up by violent storms of wind, and scattered over the land; hence they often appear suddenly in puddles of rain water where none have been previously, especially in

...ond pair being the largest: the body ...m no tail, and the shell only covers ...n half of the body: the other organs ...ually developed during succeeding ...ge. These creatures are the common ...f the Wagtails. We give the species ...roductus as an example.

...ILA. [See EAGLE.]

...ACHNIDA. A class of Articulated ...s, including Spiders, Mites, and Scor... all ranked by Linnæus under Insects; ...ough having a great analogy with ...and being equally fitted to live in the ...n distinguished from them by their ...r of limbs, their internal structure, ...abits. All the Arachnida are desti... antennæ, and have the head united ...he thorax: they have generally eight ...ough some species have six, and ...ten; they have no wings; most of ...eathe by means of air-sacs, instead ...rolonged trachea; and in the greater ...ere is a complete circulatory system. ...f the Arachnida are carnivorous, and ...nished with appropriate organs for ...redatory life; but in general they ...themselves to sucking the juices of ...; and in order to enable them to cap... ...d subdue animals otherwise capable ...tual resistance, Nature has furnished ...with a poisonous apparatus. [See ...]

...CARI. (*Picroglossus.*) A genus of ...which, like the Toucans breed in the ...s of decayed trees, which they enlarge ...nder commodious by means of the ...and it is from this habit that the ...ans give them the name of *Tacataca*, ...ation of the sound made by clipping ...ayed wood. We may here mention ...ecies described and figured in Mr. ...truly elegant monograph of the Tou-

from the tip of the bill to the end of its tail is eighteen inches: the crown of the head is covered with an elegant crest of curled feathers without barbs, which are of an intense glossy black, but as they approach the occiput they become straight, narrow, and spatulate; the feathers on the cheeks are of a yellowish white colour, tipped with black; the back of the head and upper tail coverts are of a deep blood-red; the breast is a delicate yellow, with slight crescent-shaped bars of red; the back, tail, and thighs are olive green; the quills brown, the tarsi lead-coloured: the beak of this species is lengthened, both mandibles being edged with thickly-set white serratures; the upper has an orange-coloured culmen, bordered by a stripe of dull blue extending nearly to the tip, below which, the sides of the mandibles are fine orange-red; the under mandibles is straw colour, becoming orange at the tip, and a narrow band of rich chesnut encircles both mandibles at the base. During life the colouring of the bills is generally very vivid, but after death the bright hues fade, so as oftentimes to become nearly obsolete.

ARACHNOTHERES, or SPIDER-CATCHERS. Small birds, very similar to the Sun-birds in respect to their long, arcuated beak: they inhabit the Indian Archipelago, and live on spiders.

ARANEA. [See SPIDER.]

ARCA, or ARK SHELL. The *Arcadæ*, a family of Bivalve Shells, found in the Atlantic and Pacific Oceans, the Mediterranean, &c., are distinguished by their great number of teeth, resembling those of a fine saw, and forming either a straight or curved continuous line. They bury in the sand near the coasts, and are also sometimes found attached to rocks, coral, &c. The *Arca* is nearly equivalve, inequilateral, heart-shaped, valves ribbed, and in some species

abundant. It measures from two and a half to three inches in the expanse of the fore wings, which are of a rich brown colour, with numerous irregular spots and streaks of cream white; the hind wings bright red, with blue-black spots; the thorax brown, with a red neck-band, and the abdomen red, with blue-black bars. The insects belonging to this genus are observed to vary consider-

TIGER MOTH.—(ARCTIA CAJA.)

ably in their markings, and the present species is no exception to the general rule; some having the brown and blue-black portions more or less obliterated, whilst in others they are sometimes almost entirely predominant. The Caterpillar is dark brown, and very hairy, the hairs on the back dusky, and those on the neck and sides reddish, the head black: its food is nettles, chickweed, lettuce, strawberries, &c. When full fed it spins itself a web, wherein, at the latter end of April, it changes to the Chrysalis state; and the Moth appears about the end of June or beginning of July.

CATERPILLAR OF ARCTIA CAJA.

ARCTIC FOX. (*Vulpes lagopus.*) A small species of Fox, inhabiting the high northern latitudes, and justly celebrated for the beauty and fineness of its fur. [See Fox.]

ARCTIIDÆ. A family of Lepidopterous insects, belonging to the general section Heterocera, comprising those species which have the wings deflexed in repose, the posterior pair not extending beyond the costa of the anterior. The antennæ of the males are strongly serrated; the spiral tongue is either very small, or obsolete; and the labial palpi are generally short and obtuse at the tip. The caterpillars vary much: in some species they are thickly hairy; some are furnished with long fascicles of hairs; and some are naked, but variously tubercled. They feed upon the external parts of plants, and enclose themselves in cocoons when about to undergo their transformations. The types of the family are distinguished by their larvæ being very thickly clothed with long hairs, whence they have obtained the name of "woolly bears." Such are especially the larvæ of the various species of Tiger Moths, and others nearly allied to them, which are well known, and considered as being amongst the most beautiful of all the species of Moths; their fore wings are ornamented with white, brown, or black, and the hind wings red, with black or blue markings. Some of these caterpillars are extremely destructive, particularly to fruit trees and hedges. Great alarm has been created at times when they were particularly abundant; and, indeed, their polyphagous habits on such occasions may justly be dreaded. The larvæ of some species are furnished, in addition to the long slender hairs all over the body, with several short, thick, truncated tufts of hair on the back as well as at the sides; the majority of these produce species not materially differing in the sexes; but some, forming the genus *Orgyia*, have females with the smallest rudiments of wings, and large swollen abdomens, and which are exceedingly sluggish in their habits, whilst the males are constantly on the wing, flitting about in the hottest weather of autumn. The family likewise comprises several other genera differing widely in the appearance of the sexes, or anomalous as respects their transformations.

ARCTOCEPHALUS URSINUS. The Ursal; a species of Seal, from the north of the Pacific Ocean. It is eight feet long, has no mane, and varies in colour from brown to whitish. [See Seal.]

ARCTOMYS. [See Marmot.]

ARCUATA. A section of the genus *Cancer*, of which the true Crabs are the type. [See Crab.]

ARDEA. The Heron [which see].

ARDEIDÆ. A very extensive family of birds, formed for wading, and generally seeking their food on the margins of rivers and lakes, and in marshes, where they obtain fish, reptiles, and even small mammalia. They are characterized by having very long legs, with a strong, straight, pointed, and compressed bill; in most species finely toothed; the upper mandible usually notched towards the tip; a furrow passing from the nostrils, which are linear, to the apex. They in general build and breed in societies, but always wander alone in search of food, and after the breeding season lead a solitary existence. They have ample wings, and many of them are adorned with elegant plumes and crests. [See Heron, Stork, &c.]

ARENICOLA. A genus of *Dorsibranchiata*, or Cuvier's second order of the class Annelida. The gills are of an arborescent form, on the rings of the middle part of the body. The best known species (*Arenicola marina*) is common on our coasts, where the fishermen, who dig for it as bait, know it by the name of the Lob-worm. It is almost a foot

long; the body is of a reddish colour; and on being touched, exudes a quantity of yellow fluid. The animal burns for itself a passage through the sand, and secures the sides of the passage from falling in by supplying to them a glutinous cement, which unites the particles of sand into a kind of wall or casing. This cementing does not adhere to the body, but forms a detached tube, within which the animal moves with perfect freedom, and which it leaves behind it as it progressively advances; so that the passage is kept perfect as thoroughfare for the worm by means of the lining, which does not require to be compared to the brickwork of the shaft of a mine or tunnel.

ARENICOLE. The name given to a section of lumbrics which live in holes, and form deep burrows in the earth. The species entirely want the abdominal cirri; the mandibles are horny, exposed, and curved. The ventral lobe of the mandible is generally straight; and the antennæ are two or three-jointed. They fly about in the twilight after sunset, and remember fossil when observed.

ARGALL. A species of wild sheep, found on the mountains of Siberia and Kamschatka. It is closely associated the Moufflon, which see; as to be regarded by many naturalists as the same species.

ARGENTINE. (*Argentina sphyræna.*) A genus of Malacopterygious fishes belonging to the Salmonidæ; the mouth of which is small and toothless; the tongue is furnished with strong hooked teeth; and the digestive organs resemble those of the Trout. The well-known species *Argentina sphyræna* is caught in the Mediterranean, and is common in the markets of Rome: it has also, though very rarely, been caught on the British coast. It is about two inches and a half in length; the eyes are large, and the iris silvery; the lower jaw much longer; the teeth small; the body compressed, and of an equal depth almost to the anal fin, and the tail forked. The back is of a bluish green; the sides and scales of the gills appear as if overlaid with silver; on each side of the belly is a row of circular punctures, and above them another which terminates near the vent. The air-bladder is thick, and lined with silver, the substance used in making artificial pearls.

ARGONAUTE, or PAPER-NAUTILUS. A curious molluscous animal, the shell of which is generally white and delicate; and characterised, as in the true Nautilus, but possessing one spiral cavity, into which the animal can withdraw itself entirely. It has eight arms, two of which expand into wide membranous flaps, and in the natural state in the surface of the sea, the expanded membranes are spread over the shell of the shell, where, resting along its keel or ridge, they are said to be held in close contact by a double row of suckers, and thus completely inflate it. Both being the structure and habits of the Argonauta, it is not surprising that it has half the reputation, from very early times, of using its arms as oars, and spreading those expanded membranes as sails, so as to be wafted along by the wind. (See NAUTILUS.)

The nature and habits of the Argonauta having long been a subject of much controversy, a lady (Madame Power) once made a series of interesting experiments in 1832, the result of which she read before the Academy at Catania. In order to arrive at her conclusions, she had many specimens, and placed in a shallow part of the sea, near the coast of Trapani, and by those upon the keel and ventral of the Argonauta, which she found expanded in such a manner, that the keel resembled a sail, and the ventral a kind of keel. The result of her observations went to prove that the animal uses the art of sailing on the water, using the shell successively as sails, for navigation at one, and sailing in succession by means of a kind of gymnastic which is rather remarkable. The sail, when opened out, presents a different surface, sprinkled with numerous circles of spots, within each spot is the pellicle, surrounded with a beautiful gold colour. The animal is not attached to the shell, but when under water, it adheres firmly to it by its soft arms. The fish, which is remarkably active when exposed to the air, is quite inactive in water, and therefore the facility with which it can sail under it would otherwise be little. The animal, at the approach of any object, takes in its tentacles, wraps it self over the shell, and remains, destroying the water as the same time, if hard pressed, by a discharge of any fluid, in every direction.

ARGUS. A genus of Crustaceous animals, belonging to the Isopodous order. They are oceanic species, found chiefly in the Atlantic ocean. The species possess considerable affinity to the genus of Cymothoa, but differ in the number of the joints of the antennæ, and in the form of the feet. The species are found in the West Indies, New Zealand, and the Indian Archipelago. The animal swims with great rapidity, and is remarkable for the number of eyes with which it is furnished. The species are found in the Atlantic ocean, and are generally of a large size. The animal swims with great rapidity, and is remarkable for the number of eyes with which it is furnished. The species are found in the Atlantic ocean, and are generally of a large size.

many parts of the Indian Islands. The male measures five feet six or eight inches from the beak to the tip of the tail; and the whole of the plumage is remarkable for variety and elegance. The wings consist of very large feathers, nearly three feet long, the outer webs being adorned with a row of large eyes (*ocelli*), arranged parallel to the shaft; the tail is composed of twelve feathers,

ARGUS PHEASANT.—(ARGUS GIGANTEUS.)

the two middle ones being about four feet in length, the next scarcely two, and gradually shortening to the outer ones. The whole plumage is, indeed, so varied, that to attempt to describe it fully in our limits would be vain. Its voice is rather plaintive, and not harsh as in the peacock. It is considered a very shy bird, but one was kept alive a considerable time in the aviary of the Zoological Gardens, where the pleasing variety of its plumage and the beautifully coloured skin of its head were much admired.

ARGUS. [See PECTEN.]

ARGYNNIS. A genus of diurnal Lepidoptera. We here describe two beautiful British species of Butterflies belonging to this division.

ARGYNNIS PAPHIA, or SILVER STREAK BUTTERFLY. There are few of the Lepidoptera more abundant in the woods and meadows of the South of England than the Silver Streak, which is known to

SILVER-STREAK BUTTERFLY. — (A. PAPHIA.)

delight in settling on the bramble-blo
In the male the wings above are fulv
the female virescent, with numerous
tudinal and transverse black lines an
and three rows of marginal black spot
terior wings beneath, paler and less s
the posterior wings are greenish b
with four irregular narrow pale s
waved bands; between the two la
series of ocelli, with a green iris an
pupil, and on the margin is a row of
crescents: the cilia of all the wings
are fulvous and black, paler and ferru
beneath: the body fulvous above,
beneath: the antennæ are brownis
the club black.

ARGYNNIS LATHONIA, or Q
OF SPAIN FRITILLARY. This
ingly beautiful species, though rare
country, appears to be very comm

QUEEN OF SPAIN BUTTERFLY.
(ARGYNNIS LATHONIA.)

the Continent. The upper surface in
markings resembles that of the allied
but it may be at once known by the
tiful and well-defined silver marks
under surface of the lower wings.
specimens of it are much prized by t
lector. Our cuts will give a very goo
of this insect, as we have figured be
upper and under sides.

ARICIA. A genus of Dorsibra
Annelida. They have neither tee
tentacles. The body, which is lengt
bears two ranges of lamelliform cirri
the back; and the anterior feet are fur
with denticulated crests, that do not oc
the other feet.

ARMADILLO. (*Dasypus.*) A ge
mammiferous quadrupeds, belonging
order *Edentata*, readily distinguishe
all others by the singular covering with
Nature has protected them. This is
plete suit of armour; consisting of a tr
lar or oval plate on the top of the h
large buckler over the shoulders, and

over the haunches, while between
portions there intervenes a series
e bands or shelly zones, in each
to accommodate this coat of mail
on postures of the body; the tail
ed by a series of calcareous rings;
mal altogether exhibits a striking
rom the usual structure and out-
rance of quadrupeds. Like the
t can roll itself up into a ball,
fering a uniform, solid surface,
to the attacks of birds of prey or
rupeds. The interior surface of

PICHY ARMADILLO,
(AFTER SHEDINGTON TAB.)

nd covered by the shell, is clothed
, scattered hairs, of which some
n to loose forth between the joints
ear. The Armadillos have a ra-
f snout, long ears, short and thick
stout claws; all of which are
their habits of burrowing, which
m with such astonishing rapidity
most impossible to get at them
. The hunters are then obliged
here out of their dens; and as
ey reach the surface they roll
up, and are easily captured. Al-
y abound in incredible numbers,
for their peculiar fecundity they
readily exterminated, as they are
great avidity on account of their
h is roasted in the shell, and is
a great luxury. Their food con-
r of succulent roots, ripe fruits,
soft vegetable substances; but
readily devour worms, small li-
, and the eggs of birds which build
on the ground. The species are
ed from each other, principally,
ber of bands on the trunk of the
ern the shield on the fore-shoul-
nd on the rump. Don F. Azara,
his "Essays on the Natural His-
Quadrupeds of Paraguay," showed
number of these bands is by no
tant in the same species, but that
ain prescribed limits this number
rding to the age and sex of the
. Baron Cuvier, accordingly, for
ility of definition, has divided the
s into five small groups, princi-
ignished from one another by the
al form of their teeth and claws;
e sub-divisions he has applied, re-
spectively, the names of Cachicamus, Apars,
Encoberts, Calamous, and Pelodecies.

The CACHICAMUS are those which have
four toes on each foot, and seven teeth on
each side in both the upper and lower jaws.
—The APARS have also four toes on each
foot, and nine or ten teeth on each side above
and below. The Apar has only three mova-
ble bands; the rest of its tesselated cover-
ing being nearly inflexible; it has also the
power of rolling itself into a perfect sphere,
in which state it is safe from the attack of
dogs; its smooth hard covering offering a
better defence than the sharp spines of the
hedgehog.—The ENCOBERTS have five toes
on the fore-foot, and in addition to nine or
ten teeth on each side in both jaws, have two
incisor teeth in the upper.—The CALAMOUS
have five toes; but those of the fore-foot are
obliquely placed, so that the thumb and
index finger are small, but the middle and
fourth claws are armed with immensely
large trenchant claws; on each side above
and below are nine or ten teeth.—The PEDO-
DENTES, in addition to the unequal toes and
enormous claws of the Calamous, have, on
each side of both jaws, twenty-two or twen-
ty-four small teeth. The GIANT ARMADILLO
(*Dasypus gigas*) belongs to this division.

GIANT ARMADILLO.—(DASYPUS GIGAS.)

It is the largest known species of Armadillo,
the body, exclusive of the tail, being sometimes
three feet in length.

The PICHY (*Dasypus minutus*), as we
read in Mr. Darwin's "Researches" in South
America, wanders by day over the open
plains, feeding on beetles, larvæ, roots, and
even small snakes. It perfers a very dry
soil; and the sand-dunes near the coast,
where for many months it can never taste
water, is its favourite resort. The instant
one was perceived, it was necessary in order
to catch it, almost to tumble off one's horse;
for if the soil was soft, the animal burrowed
so quickly, that its hinder quarters had al-
most disappeared before one could alight.
The Pichy likewise often tries to escape
notice by squatting close to the ground.

It is an interesting fact, fully proved by
the remains of extinct species discovered by
the above-named traveller, that more than
one gigantic animal, protected by an arma-
dillo-like covering, were once inhabitants of
this earth, but at a period so remote as to
render all attempts to ascertain their exact
nature perfectly unavailing: much, however,

has been done towards it by the aid of modern science. [See TOXODON and GLYPTODON.]

ARNEE. (*Bos Arni.*) A large and formidable quadruped, conspicuous for courage, strength, and ferocity; and closely allied to the wild ordinary Buffalo. It inhabits the high lands of Hindostan, and is remarkable for its enormous horns, which often measure from four to six feet in length. They incline outwards and backwards, and then, arching gradually towards each other as they proceed to the points, form a bold crescent: they are rough with numerous ridges and furrows. In Bengal and the neighbouring provinces this animal is known by the name of *Arna*.

ARTAMUS. A genus of birds, one of the species of which was placed by the older writers among the Shrikes. [See WOOD-SWALLOW.]

ARTICULATA. The term applied by Cuvier to a primary division of the animal kingdom. The animals composing it not only present an internal structure which is essentially different from that of the other three divisions — the VERTEBRATA, MOLLUSCA, and RADIATA — but are distinguished by external characters so definite and evident as not to be mistaken. The skeleton is not internal, as in the *Vertebrata*, but is seldom altogether absent, as in the *Mollusca*. Their entire body is divided into segments; the series of articulated rings which encircle the body supplying the place of a skeleton, and being in general hard enough to furnish the necessary resisting fulcra to the muscles of locomotion; whence they are capable of performing the several actions of walking, leaping, swimming, or flying. There are also some which are not furnished with feet, but have only soft and membranous articulated limbs, by which they can merely crawl. In some articulated animals, their ring-like appearance results merely from a certain number of transverse folds, which furrow the skin, and encircle the body; but in the greater number, the animal is enclosed in a kind of case, formed by a series of rings, so united one to another as to allow them a certain degree of movement. In most animals of this sub-kingdom, each ring in its complete state possesses a pair of nervous ganglia, united on the central line; and these ganglia are connected together by a double cord of communication, which runs along the ventral or lower surface of the body. The bulk of the body in the Articulata is made up of the muscles, by which the several segments, and their various appendages, are put in motion; and these muscles are arranged with so much regularity and exactness on the two sides of the central line, that the lateral symmetry of the Articulata is most exact. With the exception of a few of the very lowest species, all the Articulata are furnished with a distinct head, and with jaws for the prehension and reduction of the food: these jaws, however, do not open *vertically*, as in the Vertebrata, but *laterally*, and there are frequently several pairs of them, one behind the other. All the actions of the Articulata are performed with great energy; and at the time of the most rapid increase of the body, the demand for food is so great, that a short suspension of the supply proves fatal.

The members of this great division are distributed into five classes, principally founded on the organs of locomotion. 1. The ANNELIDE, or *Red-blooded Worms*; characterized by the presence of a distinct circulating system, and of respiratory organs; the extension of the body into numerous segments; and by the possession of a well-developed nervous system. 2. The CIRRIPEDES, which seem, as it were, to connect the Articulata with the Mollusca. The body is furnished with articulated cirrhi, arranged in pairs, while in many it is provided with a multivalve shell. 3. CRUSTACEA, or *Crabs, Lobsters*, &c. These have articulated limbs, more or less complicated, attached to the sides of the body. Their blood is white, their respiration aquatic, and among them alone, of all the Articulata, do we find a distinct auditory apparatus. They have transverse jaws; two compound eyes; and all are furnished with antennæ or articulated filaments attached to the head, of which there are generally four. 4. ARACHNIDA, or *Spiders, Mites*, &c. In common with a great number of the Crustacea, these have the head and thorax joined into a single piece with articulated limbs on each side; their mouth is armed with jaws, but they have no antennæ. 5. INSECTS; the most numerous in species of any throughout the Animal Kingdom. They are characterized by the division of the body into three distinct portions, — the head, thorax or corselet, and abdomen; by the possession of antennæ on the head; of three pairs of legs, and, in general, of one or two pairs of wings; and by their respiring by means of *trachex*, which are elastic vessels that receive the air by orifices termed *stigmata*, pierced in their sides, and which are distributed by minute ramifications over every part of the body.

ARVICOLA. A genus of Rodent Mammalia. [See VOLE.]

ASCARIDÆ. A family of *Entozoa*, or Intestinal Worms, which live in the bodies of other animals. They are thus characterized: body round, elastic, and tapering towards each extremity; head with three vesicles; tail obtuse or subulate; intestines spiral, milk-white, and pellucid. There are numerous species, generally deriving their specific name from the animal they chiefly infest; for the intestinal canal of most animals is affected by some species or other. As examples we shall take — 1. *Ascaris vermicularis* (the Thread or Maw-worm), which is found, in considerable numbers, chiefly in the intestinum rectum of children, where they occasion very troublesome symptoms, and are not easily expelled. They are viviparous, and about half an inch long: body a little dilated in the middle, and wrinkled at the sides, pellucid and angular, but gradually tapering and terminating in a fine point. 2. *Ascaris lumbricoides*: long round worm: oviparous, head slightly incurved, with a transverse contraction beneath it: mouth triangular: inhabits the intestines of com-

[illegible] combine their parent-
[illegible]

A genus of Molluscous ani-
[illegible] regarded as forming
Tunicata; the body is fixed,
apparently issuing from a
[illegible] are many species, most of
[illegible] of the European seas,
[illegible] They adhere by their base
[illegible] and other submarine sub-
[illegible] are more or less gelatinous,
[illegible] esculent; they contract and
[illegible] alternately, and have the
[illegible] out the water they have
[illegible] power of ejecting the con-
[illegible] sac is, in fact, their
[illegible] of defence: some of the
[illegible] are able to shoot the fluid to
[illegible] feet. Some of the Ascidiæ
[illegible] different individuals being
[illegible] by a common stem; but each
[illegible] heart, respiratory apparatus,
[illegible] system; and each fixed on a
[illegible] branches from a common
[illegible], through which a circulation
[illegible] that connects them all. Both
[illegible] and compound Ascidians, the
[illegible], when it first issues from the
[illegible] powers of locomotion, being
[illegible] a large tadpole-like tail, by
[illegible] it is propelled through the

[illegible] ASILIDÆ. A genus and
[illegible] insects; the most com-
[illegible] species of which is the *Asilus*
[illegible], an insect nearly equalling a
[illegible] length, but of a much more slender
[illegible] form; and, though of a some-
[illegible] aspect, incapable of piercing
[illegible] degree of severity.

[illegible] (*Cobder sepia.*) A species of venom-
[illegible], often mentioned both by Greek

row aperture. The shell, which derives its name from its resemblance to the spout of a *watering-pot* (a name familiarly given to it by collectors), has the form of an elongated cone, terminating at the large end in a disc, which is pierced with a number of small orifices, and bordered by a sort of corolla or frill. By means of two small valves in the tube the water is freely admitted into the interior of the shell. The animals of this genus are borers: some bury themselves in the sand, some in stone, others in wood, and others in thick shells.

ASPIDIPHORA. The name given to a group of Branchiopodous Crustacea, distinguished by having sixty pairs of legs, all furnished on the outside, near the base, with a large oval vesicle, and of which the two anterior, much larger than the rest, resemble antennæ. A large shell, almost entirely disengaged, covers the major part of the upper side of the body. [See BRANCHIOPODA.]

ASS. (*Equus asinus.*) A well-known and most useful domestic quadruped, whose good qualities are too generally undervalued by us in consequence of our possessing a more noble and powerful animal in the horse; but, as Buffon remarks, if the horse were unknown, and the care and attention which we lavish upon him were transferred to his humble and despised rival, both his physical and moral qualities would be developed to an extent, which those persons alone can fully estimate who have travelled through Eastern countries, where both animals are equally valued. In his domesticated state, as we usually find this animal in most European countries, we observe no superior marks of sagacity; but he has the merit of being patient, enduring, and inoffensive; temperate in his food, and by no means delicate in the choice of it; eating thistles and

in the state of degradation to which for so many ages successive generations have been doomed, the Ass has long since become proverbial for stolid indifference to suffering and for unconquerable obstinacy and stupidity.

From the general resemblance between the Ass and the Horse, it might naturally enough be supposed that they were very closely allied, and that one had degenerated: they are, however, perfectly distinct; there is that inseparable line drawn, that barrier between them, which Nature provides for the perfection and preservation of her productions—their mutual offspring, the mule, being incapable of reproducing its kind.—The best breed of Asses is that originally derived from the hot and dry regions of Asia; at present, perhaps, the best breed in Europe is the Spanish; and very valuable Asses are still to be had in the southern portion of the American continent, where during the existence of the Spanish dominion the breed was very carefully attended to. In truth, wherever proper attention has been paid to improve the breed by crossing the finest specimens, he is rendered nearly if not quite equal to the horse for most purposes of labour; while on hilly and precipitous roads he is decidedly better adapted from his general habits and formation. The most general colour of the Ass is a mouse-coloured grey, with a black or blackish stripe, extending along the spine to the tail, and crossed by a similar stripe over the shoulders.

The female goes with young eleven months, and seldom produces more than one foal at a time: the teeth follow the same order of appearance and renewal as those of the horse. Asses' milk has long been celebrated for its sanative qualities: invalids suffering from debility of the digestive and assimilative functions make use of it with great advantage; and to those also who are consumptive it is very generally recommended.

The WILD ASS (*Equus hemionus*), [or KOULAN, as it is called by the Persians] stands much higher on its limbs than the

WILD ASS.—(EQUUS HEMIONUS.)

common Ass; its legs are more slender, the forehead is more arched, and it is altogether more symmetrical. The mane is composed of a soft woolly dusky hair, about three or four inches long; the colour of the body is a *fine silvery grey; the upper part of the face, the sides of the neck and body*, being of a flaxen hue; and a broad brown stripe running down the back, from the mane to the tail, and crossing the shoulders, as in the common Ass. The Koulan inhabits parts of Central Asia, and migrates from north to south, according to the season. Its flesh is held in high esteem by the Tartars and Persians, who hunt it in preference to all kinds of game. We have alluded to the frequent mention of this animal by both sacred and profane writers of antiquity; and we may properly conclude by quoting the book of JOB, xxxix. 5—8: "Who hath sent out the wild ass free? or who hath loosed the bands of the wild ass? Whose house I have made the wilderness, and the barren land his dwellings. He scorneth the multitude of the city, neither regardeth he the crying of the driver. The range of the mountains is his pasture, and he searcheth after every green thing."

ASSERADOR. (The Spanish word for *Sawyer*.) The name applied in Columbia to a remarkable Lamellicorn beetle, which will be better understood by the accompanying wood-cut than by any description. The

HEWITSON'S BEETLE.
(ASSERADOR HEWITSONI.)

female wants the singular horns on the head and thorax from which the species derives its local name of "The Sawyer;" it being the belief of the country people that the insect saws off the small twigs of trees by means of the friction of the two. Mr. David Dyson informed us that he found it abundantly, and in clusters, on a species of bamboo. Mr. Empson of Bath first discovered this curious insect, and published a figure of it with the name of *Asserador Hewitsoni*, and presented his unique specimen to the British Museum at a time when the insect was very rare. It has also been described by Mr. Hope as the *Golofa Porteri*, and by Erichson as the *Scarabaeus Petiverii*; and we see the learned Berlin entomologist now fancies it may be only a variety of the Fabrician species, *S. aegeon*. We give this one example of what naturalists call the *synonymes* of a species, to show the utter impossibility of our attempting to give or to reconcile the different names applied to the same species by different authors.

ASTACUS. A genus of long-tailed Crustaceous animals, whose distinguishing cha-

...ed from the antennæ, the two ...ld are inserted in the same hari-... In it are included those well-... valuable shell-fish, the Lobster ...ertons), and the Crayfish (*Astu-...*); the former of these has, how-... naturalists been regarded as ...ecular genus (*Homarus*). [See ...d CRAYFISH.]

...AS. A genus of Radiated ani-...ns and rude in form, which we find thrown up on every coast, and which are popularly known as *Star-fishes*. They are formed of a semi-transparent and gelatinous substance covered with a thin membrane; and though at first sight they often appear like a lump of inanimate ... more minute inspection they are ...ed of life and motion. "Let a ...ie picked up," observes Mr. Rymer ... placed in some transparent pool ... life, within a rocky basin; watch ...d, doubtless, soon the most incuri-...ous will find himself compelled to ... astonishment at what he sees. ... inferior surface of each ray, the ... which before appeared so helpless ...ion, slowly protrudes numbers of ...s, which move about in search of ...ing-places, and are soon fixed, by ... little suckers at the end of each, to ... surface of a neighbouring stone, ... star-fish has been placed in glass ... salt water, to the inner surface of ..., where every movement may be ...en. When these have laid fast ...ers appear in quick succession, and ... are attached to the smooth surface, ...ad hundreds of little legs, for such ...ers seem, are actively employed, ... their aid the creature glides along ...h a gentle motion, that it seems ... to swim than crawl. Thus roused ...tivity we watch its movements, and ... that it has appetites and instincts ... direct its course. Place within its ... a piece of talated fish, or other sea-...ation, and it soon will find it out, and, ...g it between its rays, will swallow ...ight it in its ample stomach." "We ... sure that they are scavengers em-...d in Nature's grand police."

...—(ASTERIAS.)

...TERA. A genus of fixed Polypi, ... incrusting marine bodies, as in the ...ea rotulosa, an inhabitant of the West ...ist sea; or collected in a hemispherical ..., sometimes though rarely lobated, as ... the *Astrea fascata*, commonly found in ... seas of the East Indies.

...ASTUR. [See HAWK.]

...ATELES. [See SPIDER MONKEY.]

ATHERICERA. *The fourth section of ... insects, characterised by the an-*tennæ being only two or three-jointed, and the proboscis capable of being withdrawn into the mouth. Few of the Athericeræ are carnivorous in the perfect state. They are found, for the most part, on flowers leaves, and sometimes on human excrement.

ATHERINE. (*Atherina.*) A genus of Acanthopterygious fish, of which there are several species, varying in length from three inches to six. They are abundant on the shores of Italy and Greece, as also on the Peruvian and other coasts of South America, where they are esteemed delicious food. They are likewise taken in considerable numbers on the south-western coasts of England, especially near Southampton, where, from their similarity of appearance, they are called smelts. The Atherine is of a silvery yellow hue, somewhat transparent, and having a well-defined silvery band or stripe running along the sides, from gills to tail.

ATLANTA. (*Atlanta Peronii.*) A small transparent Molluscous animal, found in the seas of all hot climates; it occupies a most delicate shell spirally rolled on itself, having a thin and glassy operculum. The Atlanta belongs to the order *Heteropoda*: it has two tentacula, with large eyes at the base; and the foot large.

ATTAGEN. A local name for the Ptarmigan or White Grouse. [See PTARMIGAN.]

ATTIHAWMEG. [See SALMO ALBUS.]

AUK. (*Alca.*) A genus of aquatic birds of the family *Alcadæ*, consisting of several species; particularly the Great Auk, the Razorbill, and the Little Auk. They are characterised by having very short wings, and the legs placed so far behind the centre of the body that they stand nearly erect. They are strictly sea birds, and nestle on its borders; breeding in caverns and rocky cliffs, and laying only one large egg. They obtain their food by diving, at which they are very expert; but the power of their wings is very limited; and when they proceed on foot by land, which they do with swiftness, if pursued, their motions are the most awkward imaginable. They all feed on small fishes, crustacea, vermes, mollusca, or marine vegetables.

The GREAT AUK (*Alca impennis*) is three feet long; and has a black bill, four inches

GREAT AUK.—(ALCA IMPENNIS.)

and a quarter long, both mandibles being crossed obliquely with several ridges and furrows. Two oval-shaped white spots occupy nearly the whole space between the bill and the eyes: the head, back part of the neck, and all the upper parts of the body and wings are covered with short, soft, glossy black feathers, excepting a white mark across the wings, formed by the tips of the lesser quills. The wings do not exceed more than four inches and a quarter from the tips of the longest quill-feathers to the first joint: legs black, short, and placed near the vent. This species inhabits Norway, Iceland, Greenland, and the Feroe Islands. They are, sometimes, though very rarely, met with on the northern isles of Britain, but are never observed to be at any great distance from the shore. A British-killed specimen is in the British Museum; it was formerly in the collection of Mr. Bullock.

The RAZOR-BILL, or Common Auk, (*Alca torda*). These birds abound in the higher northern latitudes; they are, however, widely diffused; and in England many precipitous cliffs, the Needles, &c., have a fair share of them. The Razor-bill is about eighteen inches long, and the extended wings about twenty-seven inches. They build no nests, but lay their eggs upon the bare edges of lofty rocks hanging over the sea, where they form a very grotesque appearance, from the singular order of the rows in which they sit one above another. Their [one] egg is disproportionately large, being three inches long, the colour a greenish-white irregularly marked with dark spots. Thousands of these birds are killed on the coast of Labrador, for the sake of the breast feathers, which are very warm and elastic; and incredible numbers of eggs are also collected there.

The LITTLE AUK (*Mergulus alle*). This is a plump round-shaped little bird, about nine inches long. The crown of the head is

LITTLE AUK.—(MERGULUS ALLE.)

flat and black; nearly all the upper parts of the plumage are of the same colour; the cheeks and under parts white; legs and toes yellowish. These birds inhabit the inhospitable shores of Greenland and Spitzbergen; but their great breeding station is said to be in the northern part of Baffin's Bay. In *those dreary regions*, we are told, when the ice has been broken up by storms, they watch its motion, and come down in legions to banquet on the various marine animals which lie scattered before them. It is rarely that the Little Auk is seen on our shores, and can hardly be called an occasional visitant. Like the others which have been mentioned, it only lays one egg, which is of a pale bluish-green, and is placed on the most inaccessible ledges of rocks.

Different species of this family of birds are spread over various parts of the northern world; and some of them are met with on almost all the rocky cliffs on the coasts of Britain and Ireland. The female deposits her single egg upon the bare mould, in a hole dug out and formed in the ground by herself and mate, for that purpose, or in one that they find ready made by the rabbits, which they easily dislodge. They assemble early in April, prepare for the business of incubation in May, and hatch their young in the beginning of July; from which time till the middle of August they are employed in nurturing and rearing their brood: they then regularly depart for the southern coasts of France, Spain, and other regions more suited to their exigencies, where they pass the remainder of the year.

AULOSTOMA. A genus of Acanthopterygian fishes, closely allied to *Fistularia*, from which they are distinguished by having

TRUMPET-FISH.—(AULOSTOMA CHINENSIS.)

numerous free spines before the dorsal fin: the jaws are toothless; the tube of the muzzle is shorter, wider, and more compressed than in *Fistularia:* the body is very scaly; the tail is short and slender, ending in a common fin; the air-bladder is also larger than in the true Pipe-fishes. The best known species is a native of the Eastern seas.

AURICULA. A genus of Mollusca animals, having a head furnished with two tentacula, and eyes at their base: foot short and narrow. They inhabit a shell having a fancied resemblance to the ears of certain

MIDAS' EAR.—(AURICULA MIDÆ.)

animals; hence the name. Several species are European; others are found on the banks of rivers in Brazil, and the Indian and American islands. The species known as

...Rider Ear, is a hand-
...of the East Indies: its
...long; the mouth longi-
...ted lip.

...belonging to the *Scom-*
...family, found in the
...is of a fine blue black
...oblique blackish lines,
...red.

...] The name of a class of
...s, characterized by ovipa-
...covering of feathers, and
...extremities being organized
...tly used for flight. There
...ich are distinguished by
...ties of the posterior ex-
... The FIRST order is termed
...tres; they have large feet,
...fore and one behind, all
...strong, sharp, curved, and
...; this structure is asso-
...trong, curved, and sharp-
...very muscular body; and
...d and long-continued flight.
...of Prey; the principal of
...tures, Eagles, Hawks, Kites,
...Owls. The SECOND order is
...s, or Perching Birds. The
...all formed for perching, and
...grasping is very great; the
..., flexible, of moderate length,
...ith long, pointed, and slightly
... It includes the Thrushes,
...and all the sweetest songsters
...with the Redbreasts, the Spar-
...Swallows, Crows, Kingfishers,
...radise, and Humming-birds.
...ing the smaller tribes of Birds,
...serve is also given to this order.
...order is termed *Scansores*, or
...These have the power of throw-
...the fore toes back at pleasure; a
...which enables them to climb
...lienbar trunks of a tree. Of this
...Parrot tribe and the Woodpeckers
...incipal members.—The FOURTH
...ermed *Ensores*, or Gallinaceous
...is characterized by the hinder toe
...ed above the level of the three
...ones; this reduces the power of
...; but the front toes are united by a
...embrane, and are strong, straight,
...minated by robust, obtuse claws,
...for scratching up the soil, and for
...along the ground; for which pur-
...y are also furnished with very strong,
...ar legs. These birds have the head
...n proportion to the body; and the
...erally short, with the upper mandible
...hat curved. In this order are com-
...the Peacock, the Turkey, the common
...and Hen, Partridges, Pheasants, Pi-
..., &c.—The FIFTH order is termed *Grol-*
...s, or Waders. To enable them to wade
...ek their food in water, along the mar-
...of rivers, lakes, and estuaries, the birds
...ging to this order have long and slender
...and generally bare thighs. Their three
...toes are more or less united at the base
...web, and the central toe is often longer
...stronger than the rest; *the hind toe is*
...ated, short, or even sometimes wanting.

This order comprises the Ostriches, Cranes, Herons, Storks, Snipes, Woodcocks, Bustards, and Plovers. The SIXTH order is termed *Natatores*, *Palmipedes*, or web-footed Birds; and their whole organization is especially adapted for an aquatic life. Their legs are short, and placed behind the centre of equilibrium; their fore toes are united by a thick and strong web or membrane; and their bodies are covered with a dense layer of down, beneath the outer plumage, which is close, and rendered impervious to the water. The order comprises Swans, Ducks, and Geese; Auks, Penguins, Pelicans, Petrels, Coots, and Grebes. [See the art. BIRDS.]

AVICULA. A genus of Conchiferous Molluscs belonging to the order *Dimyaria*. It is thus defined by Cuvier:—"The shell has the valves equal, with a rectilinear hinge, and is often carried out into wings; the ligament is narrow and elongated; small dentilations often appear on the hinge, on its anterior part; and below the angle on the side near the mouth is the notch for the byssus. The anterior abductor muscle is still extremely minute." The foot of the animal is conical, worm-shaped, and rather long. Some very beautiful species of the Avicula are brought from the Indian Ocean, coast of Brazil, New Holland, the Red Sea, &c. The interior of the shell is pearly in the centre: some species have a broad black border surrounding it, and the margin terminating in a fringe. The *Avicula margaritifera*, or Pearl Oyster, which contains the valuable and elegant substance called Mother-of-pearl, belongs to this genus. [See PEARL OYSTER.]

AVOSET. (*Recurvirostra avocetta.*) This grallatorial bird, whose great singularity is in the form of its bill, is aquatic, the shores of the ocean and the banks of estuaries being its favourite haunts. On the shores of the Caspian and the salt lakes of Tartary they are abundant; they are widely distributed through the temperate climates of Europe; and on the south-eastern coast of England they are occasionally found. The Avoset is about eighteen inches in length; very erect, and has legs unusually long for its size.

AVOSET.—(RECURVIROSTRA AVOCETTA.)

The bill, which is three inches and a half in length, turns up like a hook, in an *opposite direction to that of the hawk or parrot, and is flat, thin, sharp, and flexible. The plumage is black and white, tall con-*

sisting of twelve white feathers; the legs are of a fine blue colour, naked and well calculated for wading; the feet are palmated, but not so much adapted for swimming as for supporting the bird upon the mud. It feeds on worms, &c., which it scoops out of the mud with its bill; and it lays two eggs, which are greenish, spotted with brown and black.

AXIS. (*Cervus Axis.*) A species of Indian Deer, of which there are two or three varieties. 1. The *Common Axis* is about the size of a fallow deer, and of a light red colour. The body is beautifully marked with

AXIS DEER. — (CERVUS AXIS.)

white spots, and a line of white runs along the sides, dividing the upper from the under parts of the body. The horns are slender, and tri-forked; the first ramification being near the base, and the second near the top, each pointing upwards. It is extremely docile, and possesses the sense of smelling in an exquisite degree. Though it is a native of the banks of the Ganges, it appears to bear the climates of Europe without injury. 2. The *Great Axis*. This animal, which is a native of Borneo and Ceylon, is about the height of a horse, and of a reddish-brown colour. The horns are trifurcated, thick, strong, and rugged; about two feet nine inches long, and two feet four inches between the tips. 3. The *Lesser Axis* is a gregarious animal, inhabiting Java, Ceylon, Borneo, and some other oriental islands. It is hunted with ardour, the sport affording the highest diversion, and the flesh being esteemed excellent.

AXOLOTL. (*Siren pisciformis.*) A singular genus of Batrachian reptiles, being perfectly amphibious, inasmuch as they possess both kinds of respiratory organs at the same period, being furnished alike with gills and lungs; and they can consequently breathe air and water according to the circumstances in which they happen to be placed. The Axolotl is about eight or nine inches long, the head is broad and flat, the

AXOLOTL.—(SIREN PISCIFORMIS.)

nose blunt, the eyes situated near the muzzle, the tail nearly as long as the body, and the toes unconnected by intermediate membranes. The colour is brown, thickly mottled both on the upper and under surfaces of the head and body, as well as on the tail and dorsal fins, with numerous small round black spots. It is commonly sold in the markets of Mexico; it is dressed after the manner of stewed eels, and when served up with a rich and stimulating sauce, is esteemed a great luxury. A second species has been lately discovered and described.

AYE-AYE. (*Cheiromys Madagascariensis.*) A singular quadruped (which in some descriptions has been confounded with the *Ai*, or Sloth, whose habits it somewhat resembles.) It is placed by Cuvier in the order *Rodentia*, but other naturalists have classed it with the Monkey tribe, from the hand-like structure of its hinder feet. It is a native of Madagascar; it burrows under ground, is very slothful, and is altogether a nocturnal animal. It has large flat ears, like those of a bat, and a tail resembling a squirrel's; but its most distinguishing peculiarity is the middle toe or finger of the fore-foot, the two last joints of which are very long, slender, and destitute of hair; this, as M. Sonnerat, who describes the one

AYE-AYE.
(CHEIROMYS MADAGASCARIENSIS.)

he had in his possession, remarks, is useful to the animal in drawing worms out of holes in the trees, and in holding on to the branches. It measures about eighteen inches from the nose to the tail; and its general colour is a pale ferruginous brown, mixed with grey.

BABOON. (*Cynocephalus.*) A genus of Quadrumana, which forms the last link in the chain that unites the Simiæ with quadrupeds; comprising a large, fierce, and formidable race of animals, who, though they in a slight degree partake of the human

...as seen in the Orang-outang, ...ish habits, propensities, and ...ey bear reverse of gentleness ...t Apes and other quadru... ...the head and face round, ...and the nostrils are situated ...between the mouth and the ...e Baboon this organ is pro... ...ly with the jaws, and the ...the end of it exactly as in ...t, the most distinctive pecu... ...ous is the masked resem... ...e head and face of these ...a large dog. They have, ...nd truncate muzzles, cheek ...ed sharp claws. Yet, not... ...its close approximation to ...r dog's head, the form and ...ion, combined with the simi... ...s and hands, give to these ...emblance to humanity as ...bling and disgusting. ...ength, furnished with dan... ...weapons, and being wild, ...ferocious, this animal, in its ...proves itself to be one of the ...of the savage race; nor can ...even when in confinement, ...coercion is continued: sul... ...own will, its savage nature ...change, and its actions are ...el, mischievous, and destruc... ...is nothing so revolting as ...habits, which they indulge to ...but it is unsafe and highly ...males to visit exhibitions of ...these beasts form a part of ...

...hearts they subsist on roots ...d partly on eggs, insects, and ...in cultivated districts they ...e into the fields and gardens, ...mit the greatest depredations ...d grain. They congregate in ...bold and skilful in their pre... ...ions, maintaining their ground ...large parties of men; and it is ...a troop of them will some... ...ong chain, extending from the ...ir ordinary habitation to the ...d which they happen to be en... ...dering, and that the produce ...is pitched from hand to hand, ...e its destination in the moun...

...on can never be said to be ...tamed, how long soever his cou... ...may have endured. As he ad... ...ge, all his worst qualities become ...ly developed, and the expression ...ountenance bears ample testimony to ...ss and brutality of his disposition. ...ides a general description of these ...it will be only necessary to particu... ...ize species where the difference ...seems most to deserve notice.

...ERRIAS. (*Cynocephalus hamadryas*.) ...This celebrated Baboon inhabits the ...ts of Arabia and Abyssinia, and was ...of the species known to the ancients, ...pictured in Egyptian monuments. It ...es upwards of four feet when standing ...erect, and about two feet six inches in a sitting posture. The face is extremely long, and of a dirty flesh colour, with a lighter ring surrounding the eyes: the head, neck, shoulders, and all the fore-part of the body is covered with long shaggy hair; that on the hips, thighs, and legs having the appearance of being clipped. The hair of the head and neck forms a long mane, which falls back over the shoulders, and the whiskers are broad, and directed backwards so as to cover the ears. The general colour of the hair is a mixture of light grey and chestnut; a dark brown line passes down the middle of the back; and the tail is terminated by a brown tuft of long hair: the callosities are large, and of a dark flesh colour: the hands are almost jet black; and the feet are rusty brown. The female when full grown is as large as the male, but is destitute of a mane, and the hair of the body is short and of a uniform deep olive-brown colour. The Derrias while young is gentle and playful, but as soon as it has arrived at a mature age it becomes sulky and malicious.

The CHACMA or PIG-FACED BABOON (*Cynocephalus porcarius*) is equal in size, and much superior in strength, to a common English mastiff. It inhabits the mountains in the neighbourhood of the Cape of Good Hope, associates in families more or less numerous, and occasionally levies contributions on the gardens of Cape Town, which it performs in a very adroit and

PIG-FACED BABOON. (CYNOCEPHALUS PORCARIUS.)

regular manner. The Chacma is of a uniform dark brown colour, mixed throughout with a dark green shade, occasionally relieved by a few hairs of a lighter hue. The hair is long and shaggy, particularly on the neck and shoulders of the males, where it forms a distinct mane; the face and ears are naked, as are likewise the palms of the hands and soles of the feet; and the cheeks of both sexes have small whiskers, directed backwards, of a greyish colour. The hands, face, and ears are of a very dark violet-blue colour; the muzzle is extremely prolonged, and the skull is contracted and flattened. It is no uncommon thing for travellers, while ascending the steep and dangerous mountains passes in South Africa, to meet with troops of these animals, who have been running themselves on the rocks; if not attacked, they hasten off, yelling and screaming; but if fired at and wounded, they no sooner get out of the range of the gun than

they throw and roll down stones, to resent the injury.

The COMMON BABOON. (*Cynocephalus papio.*) This species is a native of the coast of Guinea, and is the one most commonly exhibited by itinerant showmen. Its appearance is at once grotesque and formidable; its nervous limbs and compressed form indicate great force and agility; the anterior parts especially being extremely strong and muscular. It is of a uniform yellowish-brown colour, with a shade of light red upon the head, shoulders, and extremities; the face, ears, and hands naked, and entirely black. The cheeks are considerably swollen below the eyes; after which the face contracts suddenly, which gives the nose the appearance of having been broken by a violent blow. It is furnished with whiskers, which have a backward direction, but do not conceal the ears. While young, this Baboon is gentle and familiar; but as it approaches adult age, it displays all the repulsive manner, the ferocity and intractability common to the rest of its kind.

The MANDRILL, or VARIEGATED BABOON. (*Cynocephalus maimon.*) The Mandrill is the most remarkable of the whole genus for brilliancy and variety of colour, while for size it is unequalled by any other Baboon, its height when standing upright being upwards of five feet. The limbs

MANDRILL. — (CYNOCEPHALUS MAIMON.)

are large and muscular, the body thick and robust; the head large, face long, scarcely any forehead, and the snout ending abruptly; the eyes small and deeply sunk in the head; the cheek-bones enormously swollen, and marked with several deep furrows of violet-blue, purple, and scarlet; and the muzzle and lips large and protuberant. The hair of the forehead and temples rises, in a remarkable manner, into a pointed form, which gives the head a triangular appearance; and a small pointed orange-yellow beard adorns the chin. Round the back of the neck the hair is long, and inclines forwards, somewhat in the manner of a wreath. On the loins the skin is almost bare and of a violet-blue colour, gradually altering into a bright blood-red, which is more conspicuous on the hinder parts, where it surrounds the tail, which is very short, and generally carried erect. In most of its habits the Mandrill resembles the other Baboons, especially in its growing more morose as it advances in age, *and in becoming offensively libidinous. In their wild state they generally* march in large bands, and are so formidable that not only are the inhabitants afraid to meet them in the woods, unless they are in considerable companies and well armed, but the beasts of the forest, including even the elephant, quit their respective haunts at the approach of the powerful and savage animals whose habits we have endeavoured to describe. To this truly formidable species belonged "Happy Jerry," long kept in the fine menagerie of Mr. Cross. He was trained to smoke a pipe, and seemed to relish a pot of porter: but he was fierce to most persons who approached him, unless they were his keepers. His stuffed skin and skull may now be seen in the magnificent collection of the British Museum.

There are several other species which our limits forbid us to do more than merely mention; as, the DRILL, the WOOD-BABOON, the PIGTAIL, the CRESTED, the YELLOW, the CINEREOUS, and others.

BABYROUSSA. (*Sus Babirussa.*) This animal is nearly of the size of a common Hog, and has generally been referred to the Hog genus, though in many respects it is essentially different; its form being longer, its limbs more slender, and, instead of bristles, being covered with fine, short, and somewhat woolly hair, of a dark brown colour, interspersed with a few bristles on the upper and hinder part of the back. It is still further distinguished by the very extraordinary position and form of its enormous upper tusks, which, instead of being situated internally, on the edge of the jaw, as in other animals, are placed externally, perforating the upper lip, and turning upwards toward the forehead, like the horns of the Ruminantia; the tusks of the lower jaw are also very long, sharp, and curved; but not of equal magnitude with those of the upper. The tusks are of a very fine ivory, but neither so hard nor so durable as that of the elephant; the eyes are small; the ears erect and pointed; the tail rather long, slender, and tufted at the end with long hairs.

BABYROUSSA. — (SUS BABIRUSSA.)

The Babyroussa is a gregarious animal, inhabiting the woods of Java, Amboyna, the Celebes, and other Indian islands, where large herds are met with. Their food consists chiefly of vegetables, and the leaves of trees. When sleeping or resting themselves in a standing posture, they are said often to hook or support themselves by placing the

upper tanks across the lower branches of the tree, and, thus suspended, sleep in security. When hunted closely, and in apparent danger, this animal will, if possible, plunge into some great river, or the sea, where it swims with great facility, and by alternate diving and rising, is frequently able to escape from its pursuers. In the gardens of the Zoological Society a fine specimen of this rare animal may be (or was lately) seen.

BACULITES. A species of Ammonite or Snake-stone. [See AMMONITE.]

BADGER. (*Meles vulgaris.*) The Badger is a carnivorous quadruped, inhabiting most parts of Europe and Asia; and is generally regarded as a solitary, stupid animal, that seeks refuge in the most sequestered places,

BADGER.—(MELES VULGARIS.)

and shuns the light of day. It has very short legs and a broad flat body; the head is long and pointed, the eyes small, the neck short and thick, the tail remarkably short, and the hide thick and tough. The upper parts of the body are covered with long coarse hair, the base of which is a rusty grey; but on the breast, belly, and limbs it is short and black; the face is white, and along each side of the head runs a long pyramidal band of black, including the eyes and ears.

With its powerful claws it constructs a deep and commodious burrow; and as it continues to bury itself, it throws the earth behind it to a great distance, and thus forms for itself a long winding hole, ending in a round apartment at the bottom, which is well lined with dry grass and hay. This retreat it seldom quits till night, when it steals from its subterraneous abode for the purpose of procuring food. It lives chiefly on roots, fruits, insects, and frogs; but it also robs the bee of its honey, and destroys the eggs of partridges and other birds which build their nests on the ground. It is quiet and inoffensive; but when attacked by dogs it defends itself with great resolution, and seldom dies unrevenged of its enemies. The Badger is about two feet six inches long: his skin is so thick that it resists the impression of the teeth, and so loose, that even when a dog has seized it, he is enabled to turn round easily, and severely bite his assailant. The female produces three or four young at a time. The flesh of the Badger is reckoned a delicacy in Italy, France, and China, and may be made into hams and bacon. The skin, when *dressed with the hair on*, is *impervious to the rain*, and consequently makes excellent covers for travelling trunks, &c.; and the hairs or bristles are made into brushes for paluters.

The AMERICAN BADGER, or CARCAJOU. (*Meles Labradorica.*) This animal is rather *smaller* than the European species; its fore-claws are longer and stronger, and the black bands on the face narrower. Its prevailing colour is a kind of mottled grey, and, with the exception of the head and extremities, which are covered with short coarse hair, it is furnished with a fine, long, silky fur. It is a slow and timid animal, takes to the first earth it meets with when pursued, and, burrowing in the sand, is soon out of the reach of danger. Whilst the ground *is* covered with snow the American Badger seldom ventures from his hole, but passes the severe winter months in a semi-torpid state. By some naturalists this is regarded as the type of a distinct genus (Taxidea).

The INDIAN BADGER (*Mydaus collaris*) is about twenty inches in height and two feet in length, the form of its body and limbs bearing a resemblance to the bear, while its head, eyes, and tail remind us of the hog. The hair is a yellowish white, with black points, which gives the whole a dark brown shade; but the legs and under parts of the body are black. The ears are very small; and on each side of the head are two black bands, which descend down the neck, and enclose the throat. They are so exceedingly fierce that dogs would quite as readily encounter the hyæna or wolf.

BALÆNA. [See WHALE.]

BALÆNICEPS. [See BOAT-BILL.]

BALANCE-FISH. (*Zygæna.*) A remarkable fish, the shape of whose monstrous head has been likened to a blacksmith's large hammer. It is a native of the Mediterranean Sea. [See ZYGÆNA.]

BALANINUS. A genus of Coleopterous insects, belonging to the family *Curculionidæ*, furnished with a long slender rostrum, or snout, at the tip of which is a minute pair of sharp horizontal jaws, and by means of which it is enabled to deposit its eggs, which are generally placed in the kernel of some fruit. Of this kind is the *Bala-*

NUT WEEVIL.—(BALANINUS NUCUM.)

ninus Nucum, or Nut-Weevil, whose larva is so commonly found in nuts, filberts, &c. The egg is introduced when the nut is young and soft; and the nut being but slightly injured, continues to grow and ripen, while the larva feeds upon the kernel in which it is imbedded. When about to change its state, it bores through the shell and escapes, leaving a small round orifice: falling on the ground, it then burrows into the earth, where it assumes the pupa state, and in the following summer it comes forth as a perfect insect.

BALANUS. A genus of multivalve Cirripedes, usually found adhering to various submarine productions, whether fixed or moveable; such as the harder sea-plants and all sorts of crustaceous as well as testaceous animals, rocks, ships, timber, &c. The shell shapes itself at the base to the figure of the surface of whatever it adheres to, and from which it is with difficulty removed. It altogether forms a rude hollow cone. The animal inclosed in it is of a very singular structure: it has twelve crooked legs or arms, garnished with a great number of hairs, which it elevates on all occasions; besides eight others, inferior in size and lower in position. In general the *Balani* are considered ineligible as food: but Capt. P. P. King speaks of some large kinds (*Balanus psittacus*) on the southern parts of the South American coast as forming a very common and highly esteemed food of the natives, the flesh equalling in richness and delicacy that of the crab. He also says, it occurs in large bunches, and presents somewhat of a cactus-like appearance. The parent is covered by its progeny, so that large branches are found composed of from fifty to a hundred distinct individuals, each of which becomes in its turn the foundation of another colony.

A GROUP OF BALANUS OVULARIS.

BALANUS OVULARIS.

BALD BUZZARD. [See Osprey.]

BALEARIC CRANE. [See Crane.]

BALTIMORE BIRD. [See Oriole.]

BAND-FISH. (*Cepola.*) This genus of Acanthopterygious fishes is of a form so thin and flat in proportion to its length, as to have obtained among the ancient ichthyologists the name of Tænia or Riband-fish. One species (*C. Mediterranea*) is a native of the Mediterranean, and varies in length from eighteen inches to three feet. The head is *short and rather truncated in front; the mouth is wide, and the lower jaw longer* than the upper, both being armed with sharp curved teeth, of which there is a double row in the lower jaw. The sides are extremely compressed; and the body, both above and below, sharpens into a kind of carina or ridge. The dorsal fin commences from the back of the head, and is continued as far as the tail; the vent fin also extends nearly throughout the whole length. The colour of the body is bright silver, with a dusky tinge above; the sides are marked with a few large reddish spots; the fins are all of a pale red colour, and the skin is covered with extremely small scales. It is predaceous, and swims with great rapidity.

Another species, found on our coasts, (*Cepola rubescens*) is of a pale carmine colour, and varies from ten to fifteen inches in length. It is very smooth and slender, and tapers very gradually from the head to the tail.

BANDICOOT. (*Perameles.*) A genus of Marsupial animals, indigenous to Australia, and in some respects analogous to the Opossums and Kangaroos; but the disproportion between the fore and hind legs is by no means so great, though sufficient to make their gait rabbit-like, or a succession of leaps, rather than walking or running. Their feet are provided with broad powerful claws, which enable them to burrow with great facility, and to dig up roots, on which they principally feed. The most common species is called the Long-nosed Bandicoot (*Perameles nasuta*): it measures about a foot and a half from the tip of the snout to the origin of the tail; the ears are erect and pointed, the eyes small, and the tail bearing considerable resemblance to that of a large overgrown rat, to which the whole animal, in fact, may be likened as regards its general external appearance, as well as its depredations upon the farm-yards and granaries.

BANXRING. [See Tupaia.]

BARB. The name given to a fleet and vigorous breed of horses reared by the Moors of Barbary, and introduced into Spain during their dominion in that country, but since their expulsion it has been allowed greatly to degenerate; nor is it much better in their original clime, except among the wild nomadic tribes of the desert, where the breed still exists in perfection. But the Barb is far from excelling in symmetrical beauty; the true value of these noble animals is to be discovered in their qualities rather than in their appearance. With a large and clumsy head, a short thick neck, and a broad chest, are united a long body and slender legs; but, on the other hand, they are unrivalled in speed, abstinence, docility, patience, and endurance under fatigue. They are sinewy, nervous, and long-winded; they walk well, and stop short, if required, even in full career; walking and galloping, indeed, being the only paces these animals are allowed to practise. It is not customary, except in cavalry exercises, for the Moors to try the powers of their horses very severely; they then, however, gallop them at the height

horses are never cas-
used for the saddle, the
breeding. It has been
grow ripe, but never
their vigour to the
to be long-lived, and
diseases.

(*Pithecus inuus.*) This
grows to the height of
remarkable for docility,
pline, is made to exhi-
alligence. Its general
-brown; the face is a
It is common in Bar-
rts of Africa, and is also
numbers on the rock
species was well known
it has been the "show-
immemorial. Though
confinement, it is re-
active, and courageous
is particularly distin-
ment to its young.

ius vulgaris.) A fresh-
ious fish, usually fre-
and still parts of rivers,

ARBUS VULGARIS.)

nt strength and rapidity,
on aquatic plants, worms,
it obtains by boring and
soil of the banks with its
ally by preying on smaller
to receive its name from
s attached about its mouth.
lages it is readily distin-
s by the great extension of
yond the lower. It is some-
eigh from fifteen to eighteen
measure three feet in length:
l length, however, is from
en inches. The general co-
r part of the head and body
rown; the scales are small,
of a pale gold colour, edged
e back and sides, and silvery-
elly; the pectoral fins are a
he ventral and anal fins are
llow; and the tail is slightly
a deep purple. The Thames
el in abundance, and of a large
rous are they about Shepper-
ion," says Mr. Yarrell, "that
and fifty pounds weight have
five hours, and on one occasion
two hundred and eighty pounds
ge sized Barbel were taken in
The flesh of the Barbel is very
nsavoury; the fish, consequent-
in little estimation, except as
ort for the angler.

T. The Barbets are a family of
ging to the order Scansores, or

Climbers, and are distinguished by their large conical beak, which appears swollen, or, as it were, puffed out at the sides of its base, and by being *bearded* (whence the name) with five tufts of stiff bristles, directed forwards. They inhabit Java, Sumatra, &c., and sport about in all positions on the trunks and among the branches of trees, in search of insects or their larvæ, on which they feed; some of them are said also to devour small birds and fruits; the typical genera, however, appear confined to the former food. The plumage of some of the species is very brilliant.

MANT COLOURED BARBET.—(BUCCO VERSICOLOR.)

BARIS. A genus of Coleopterous insects, which feed upon the dead parts of trees.

BARKING BIRD. (*Pteroptochos.*) This Tenuirostral bird, which is common in Chiloe and Chonos,—islands in the South American Archipelago,—is called by the natives Guid-guid: "but its English name," says Mr. Darwin, "is well given; for I defy any one at first to feel certain that a small dog is not yelping somewhere in the forest. Just as with the Cheucau, a person will sometimes hear the bark close by, but in vain may endeavour, by watching, and with still less chance by beating the bushes, to see its author; yet at other times the Guid-guid comes fearlessly near." Its manner of feeding and its general habits are very similar to those of the Cheucau. Both species are said to build their nests close to the ground, amongst the rotten branches. [See CHEUCAU.]

BARNACLE. A name given to the cirripedes sometimes found adhering to the bottoms and sides of ships, &c. [See BALANUS.]

BASILISK. (*Basiliscus.*) The Basilisk of modern naturalists has no affinity to the malignant serpent of the poets whose very aspect the ancients believed to be fatal

BASILISK.—(BASILISCUS MITRATUS.)

to all who looked upon it. The animal now recognised by the name of Basilisk is a species of lizard, of a very singular shape, being distinguished by a long and broad wing-like process or expansion along the back and upper part of the tail, and furnished at certain distances with interval radii analogous to those in the wings of the *draco*, or flying lizard. This process is capable of being either dilated or contracted at the pleasure of the animal; and the occiput or hind part of the head is elevated into a very conspicuous pointed hood or hollow crest. Notwithstanding its formidable appearance, however, the Basilisk is a perfectly harmless reptile, residing principally among trees, where it feeds on insects, &c. The general colour of this animal is a pale cinereous brown, slightly varied on the back and sides with different shades of brown and blue, and silvery white on the belly. It is possessed of great activity, and from its peculiar structure can adapt itself to the watery element without inconvenience. It is most common in the tropical parts of South America.

BATS. (*Cheiroptera.*) The singular animals which come under this denomination were long considered as partaking so much of the character of birds with that of quadrupeds, that it was thought difficult to assign to them a distinct station in the system of nature. Such doubts, however, have long since yielded to scientific investigation; their anatomical and intes-

BAT.—(VESPERTILIO MURINUS.)

tinal structure, their viviparous nature, their hair, &c., entitling them to be ranked as quadrupeds. Still it is not to be denied that their peculiar conformation is admirably calculated for the exercise of considerable powers of flight. The *ala*, indeed, is their home; through this they move with vast rapidity, and with great apparent ease, wheeling in every direction in search of their insect prey, and performing the most abrupt evolutions to secure it. A remark, indeed, not less true than trite, has been often made that, in their mode of flight, Bats bear a very strong resemblance to swallows; exercising the same purpose in the economy of nature, in restraining the multiplication of the crepuscular and nocturnal insects, as the swallows do in regard to the diurnal.

Their senses of smell, feeling, and hearing are wonderfully acute. In many genera the nose is furnished with a membranous foliation of most delicate structure, by which the sense of smelling is greatly refined; the ears also are in many kinds expanded and capable of being folded down; while their ample wings, and the membranous tissues of the ear and nose, are so abundantly supplied with nerves, as to enable them, even should they be deprived of sight, to pursue uninterruptedly their aerial course, avoiding every obstacle, and passing adroitly through the narrowest apertures.

On the approach of cold weather the Bat hibernates, and in preparing for this state of lifeless inactivity, it seems rather to select a place where it may remain safe from molestation, than where it may be commodiously lodged. "The hibernation of these animals," says Mr. Bell, "is indeed one of the most interesting points in their economy. At an earlier or later period of autumn, according to the species, they retreat, generally in large congregations of various species together, to the most retired places; as under the roofs of houses and churches, in caverns, in the hollows of trees, and similar situations, where they suspend themselves by their hinder claws, with the head downwards. Here they crowd together, holding not only by the surface of the walls of their retreat, but by each other, one crowding over another so closely that it appears scarcely possible for such numbers to occupy so small a space."

Not less than twenty species of Bats are enumerated as known in Great Britain; but these, although differing from each other, either in structure, colour, or habits, can hardly be deemed of sufficient importance to occupy the space that would be necessary to describe them minutely; we shall therefore merely refer to a few of them in the briefest manner possible, and in another place narrate a few particulars relating to two foreign species of a more formidable character.

The COMMON BAT, or FLITTER-MOUSE. (*Vespertilio pipistrellus.*) There are several species known in England, but this is the most common. It is nearly two inches and a half long, or about the size of a mouse. The members usually called wings, are merely the four interior toes of the fore-feet extended to an enormous length, and connected by a thin membrane, reaching also to the hind legs, and from them to the tail; the body is covered with short fur, of a mouse-colour, tinged with red; and the membranes are of a deep dusky hue; the eyes are small, and the ears exactly resemble those of the mouse. This species of Bat makes its appearance in the twilight of fine summer evenings, frequenting the sides of woods, glades, and shady walks, or skimming along the surface of tranquil rivers, where moths, gnats, and other nocturnal insects are most readily to be found; but if the weather be not fine, it remains shut up in the chinks or fissures of crumbling masonry, or lies concealed in the friendly recesses of some hollow tree.

The BARBASTELLE BAT. (*Vespertilio barbastellus.*) This species was originally described by Daubenton, in 1759, but

first distinction as a native of Great Britain due to Mr. Sowerby, who published an account of it with a figure in the British Miscellany. Its general colour is darker than that of any other British species, being fully black on the back, with here and there a few white hairs, which become more numerous with age; the hinder parts are reddish brown, and the belly a pale grey. In rare, the naked part of the muzzle, and the flying membrane, are of a dusky black. Length of the head and body, two inches; breadth of wings, between ten and eleven inches. The muzzle is truncated, and a wave leads on each side upwards to the orbits. The cheeks are rather tumid, and covered with black hair, which forms a sort of moustache. The ears are about the length of the head, nearly as broad as they are long, and irregularly four-sided; the inner edges are turned back, forming a longitudinal groove just within the margin; the outer and superior angle prominent, rounded, and turned back. The eyes are very small,

BARBASTELLE Bat.—(V. BARBASTELLUS.)

placed close to the base of the auricle, and almost concealed by the hair on the cheek. The fur of the body is long and soft. Mr. Bell having had a Barbastelle Bat in his possession for some time, was able to give a few slight notices of its habits. "He fed readily on small bits of meat, and drank water. He was a timid animal, and did not evince the slightest disposition to become familiarized with me; he would take his food, however, with his companions, and was accustomed to rest with them in a cluster, at the top of the box in which they were placed. The Barbastelle certainly became torpid more readily than any of the others, and more completely so; but when awake, evinced extreme restlessness, and was incessantly biting with great violence at the wires of his box. When suffered to fly about the room, he flew very low, and less actively than any other under similar circumstances; and he was fond of lying before the fire on the hearth-rug, where he appeared quite to luxuriate in the warmth."

The GREAT BAT. (*Vespertilio noctula.*) This was termed *altivolans* by White of Selborne, from its always flying high in the air, in pursuit of its prey. It is gregarious in its habits; the ears are short and rounded; it is seven inches long, and of a reddish ash-colour.

The SEROTINE. (*Vespertilio serotinus.*) This species is somewhat rare in England, but very common in France. It is of a dark chestnut colour; frequents forests; is solitary in its habits; and its flight is slow.

The MOUSE-COLOURED BAT. (*Vespertilio murinus.*) This is the largest of the British Bats, exceeding even the Noctule in its length of body and extent of wings. The head of this Bat is long, with the ears inclining backwards.

The LONG-EARED BAT. (*Plecotus auritus.*) One of the most common of our British Bats, and at the same time one of the most pleasing in its appearance, owing to the extraordinary transparency and beauty of the ears. It is also more familiar and bold when in confinement than any other species.

The HORSE-SHOE BAT. (*Rhinolophus.*) There is a greater and lesser variety of this animal; the former designated *Rhinolophus ferrum-equinum*, the latter *Rhinolophus hippocrepis*. This genus is distinguished by a very curious nasal appendage, or foliaceous membrane at the end of the nose, shaped somewhat like a horse-shoe, and supposed to extend in an extraordinary degree the sense of smelling. The upper part of the body is of a deep ash-colour, the lower part inclining to white.

In concluding this article on Bats, we are again tempted to avail ourselves of the intelligent observations of Mr. Bell: "It is perhaps difficult to account for the prejudices which have always existed against these harmless and interesting little animals, which have not only furnished objects of superstitious dread to the ignorant, but have proved to the poet and the painter a fertile source of images of gloom and terror. That the ancient Greek and Roman poets, furnished with exaggerated accounts of the animals infesting the remote regions with which their commerce or their conquests had made them acquainted, should have caught eagerly at those marvellous stories and descriptions, and rendered them subservient to their fabulous but highly imaginative mythology, is not wonderful; and it is more than probable that some of the Indian species of Bats, with their predatory habits, their multitudinous numbers, their obscure and mysterious retreats, and the strange combination of the character of beast and bird which they were believed to possess, gave to Virgil the idea, which he has so poetically worked out, of the Harpies which fell upon the hastily spread tables of his hero and his companions, and polluted, whilst they devoured, the feast from which they had driven the affrighted guests. But that the little harmless Bats of our own climate, whose habits are at once so innocent and so amusing, and whose time of appearance and activity is that when every thing around would lead the mind to tranquillity and peace, should be forced into scenes of mystery and horror, as an almost essential feature in the picture, is an anomaly which cannot be easily explained." [See PTEROPUS and VAMPIRE-BAT.]

BATHYERGUS, or COAST RAT. This Rodent animal is a native of Southern Africa, frequenting sandy tracts along the coast, where it burrows with great rapidity, working out long galleries, and throwing up hil-

COAST RAT.—(HATHERGUS MARITIMUS.)

locks like the mole. In some districts these are so very numerous, as to render it dangerous to pass over them on horseback, the earth where excavated often suddenly giving way. The Coast Rat is about a foot long, exclusive of the tail, which is three inches; and its general colour is greyish ash. The incisors are of an enormous size; those in the upper jaw having a longitudinal furrow down the front. The whole form and organization of this animal fit it for an underground existence; it is accordingly often called the Sand Mole.

BATRACHOIDEÆ. A family of monstrous-looking Acanthopterygious fishes, whose pectoral fins are supported upon the elongated carpal bones which in some genera perform the functions of hind feet, enabling the fish to creep over sand or mud like small quadrupeds. The ventrals are jugular, and the gill-plates and rays are enveloped in loose skin. Cutaneous appendages or barbels generally fringe the lips, or lower jaw, to the pectorals. In general the skin is destitute of scales, but is sometimes studded with bony tubercles. The skeleton is, for the most part, but imperfectly osseous. Some genera have an air-bladder, and some have not. *Batrachus* has a spiny operculum and suboperculum, and a flat head broader than the body, but not very disproportionate in length. *Lophius* has a depressed form, and *Chironectes* a compressed one, and both have monstrously large heads, with a small hole behind the pectorals for an opening to the gills. In *Malthe* the head is flat, and greatly lengthened laterally by the projection of the large subopercula. The Batrachoidese can live long out of the water, in consequence of the smallness of their gill-openings. The Chironectes, in particular, are able, even in warm countries, to pass two or three days in creeping over the land. All the Batrachoidese conceal themselves in the mud or sand, and lie in wait to take their prey by surprise. They exist in the Atlantic, Indian, and Pacific oceans; and several also inhabit the European seas.

BATRACHIANS; BATRACHIA. Frogs, Toads, and all reptiles which, like them, have soft and naked skins (i. e. uncovered with scales), and in the early stage of existence respire by means of gills.

BEAGLE. A small kind of hound, or hunting-dog, formerly much prized for its excellent scent and persevering endurance when employed in hare-hunting. It cannot *indeed* boast of great speed; but its "slow *and sure*" *qualities* are generally rewarded with success, although the chase may be continued for two or three hours. There are several kinds of Beagles; as, the Southern Beagle, the fleet Northern or Cat Beagle, and a very diminutive one called the Lap-dog Beagle.

BEAR. (*Ursus.*) A well-known quadruped, belonging to a family of plantigrades, distinguished by their ponderous bulk, massive limbs, and heavy gait. There are several species of Bears. Of all the Carnivora they are the most omnivorous in their diet, —some of them living almost entirely upon vegetable food, and nearly all being capable of supporting themselves upon it: even the most carnivorous of them, however, will seldom attack man, unless provoked to do so by aggression, or strongly incited by hunger; but when attacked they prove themselves very formidable opponents. They have six incisor and two canine teeth in each jaw, twelve molars in the upper and fourteen in the lower jaw; pendactyle or five-toed feet, armed with strong claws, but which, not being retractile, are more calculated for digging and climbing than for tearing prey. For the most part Bears are unsocial animals, frequenting the recesses of mountains and caverns, and the depths of the forests. During the winter they lay up in caves and hollow trees, passing that inclement season almost without food, and in a comparatively dormant state. In Europe, Asia, and America, Bears are pretty widely diffused, but in Africa they are more rarely found. In the Alpine regions the Bear is brown; in some other parts of Europe, black; and in some parts of Norway it has been seen of a grey colour, and even perfectly white. Bears are reported to be very fond of honey, in search of which they will climb trees, in order to get at the nests of wild bees; for, notwithstanding his awkward form, the Bear is an expert climber. In Russia the skins of Bears are among the most useful as well as comfortable articles of winter apparel; and in many other northern countries they are made into beds, coverlids, caps, and gloves. In England bears' skins are used for the hammer-cloths of carriages, for pistol holsters, &c.; and the leather prepared from them is used for many purposes, as harness, &c., where strength is requisite.

The COMMON or BROWN BEAR. (*Ursus Arctos.*) This species, with some variation as to size and colour, is a native of almost all the northern parts of Europe and Asia. Its usual size is about four feet in length, by about two feet and a half in height. In its nature it is savage and solitary; and though when tamed it appears gentle and placid to its owner, it should be cautiously managed, being often capricious, treacherous, and vindictive. Its retreat, during the period of hybernation, is the natural hollow of a tree, or some cavern; but where these are not conveniently found, it will either form a suitable den for itself by digging, or construct a rude kind of hut with branches of trees, lined with moss. Thus protected, and fat with its summer

will remain without further suste-
the ensuing spring; during which
female generally produces two cubs,
hen first born are not much larger
ustiff's puppies.
riters agree that the Brown Bear
ose time common in the British
The Caledonian bears (another
British with the Romans) were
to make sport for the Roman
to whom the excitement of wit-
the suffering of man and beast,
st distressing shape, seems to have
too welcome. For many years (says
arip) it has been swept away from
ds so completely, that we find it im-
r baiting, a sport in which our no-
s well as the commonalty, of the
ne—nay, even royalty itself—de-
A bear-bait was one of the re-
offered to Elizabeth at Kenilworth,
e Earl of Northumberland's House-
k we read of 20s. for his bear-ward.
hwark there was a regular bear-
that disputed popularity with the
d Swan theatres on the same side
ater. Now, however, so much do
ter (in this instance certainly for
er), such barbarous sports are ba-
rom the metropolis."

MERICAN BLACK BEAR. (*Ur-*
rimnus.) This animal is somewhat
than the European Brown Bear just
d. It has a long head, pointed nose,
yes, and short ears rounded at the
limbs are strong, thick, and clumsy;
is short, its feet large, and the hair
ody and limbs is black, smooth, and
This animal inhabits all the north-
s of America, migrating occasionally
northern to the more southern parts
of food, which consists chiefly of
les and grain. So impenetrable are
treats during the period of gestation,
though immense numbers of Bears
ed annually in America, hardly a
female is ever found among them.
h of these Bears in autumn, when
s become exceedingly large by feed-
acorns and other arborescent food,
ously delicate; the hams, in parti-
are much esteemed; and the fat,
preserves a certain degree of fluidity,
arkably white and sweet. In the
an *Naturalist*, by Mr. P. H. Gosse, the
ng account of this animal forms a
of the author's interesting 'Conver-
'—
s species appear to be less carnivorous
e *Ursus Arctos* of northern Europe,
e ferocious. His chief food seems
a vegetable nature, grain, fruits, and
He has an appetite for pork, however,
asionally makes a visit to the farmer's
for the purpose of cultivating an
chance with the grunting inhabitants.
years ago, one of our nearest neigh-
was aroused in the night by a com-
in his hog-pen; suspecting the
he jumped up immediately, took his
nd saw a bear in the *act of getting*
he fence with a fine hog, embraced
very lovingly in his fore-paws. The man fired (while his wife held a light), and killed the intruder. It is difficult to hurt a bear with any weapon but fire-arms; he fights with his fore-paws like a cat; and so watchful is he, and so expert at warding off every blow that is made at him, that it is next to impossible to strike his head, the only part in which he is vulnerable; for you might almost as well batter a feather-bed as the body of a bear, so encased and shielded by an enormous layer of fat. In our climate he becomes torpid during winter, generally choosing for his hybernaculum some large hollow log, or a cavity beneath the root of an overthrown tree. The species is numerous in all the wooded parts of this continent, even to the shores of the Gulf of Mexico. In the southern states he commits depredations on the farmer's fields of maize: when the corn is in that milky state called 'roasting ears,' so prized for boiling and eating as a table dish, like green peas, or roasting whole on the cob, the bear manifests a singular unity of taste with the farmer, and devours and treads down a large quantity, as he finds no difficulty in climbing over the zig-zag rail fence. I have been told that he repeats his nightly visit to the same field; and, what is singular, always, on such occasions, mounts the fence, night after night, at the same spot where he got over the first time. The planters take advantage of this regular habit, by fastening to the fence a heavily loaded gun at such an angle that it shall point at the bear's breast as he rises on his hind legs. The identical crossing-place is easily known by his great tracks in the soft earth. A stick is attached to the trigger, and this is made fast, at right angles, to a transverse stick resting on two forks about breast high, a few inches outside the fence. The bear rears up to put his fore-paws on the rails, and in getting over presses with his breast against the transverse stick, which drives back the trigger, and poor Bruin instantly receives the reward of his dishonesty."

The GRISLY BEAR. (*Ursus ferox.*) The Grisly Bear is about nine feet long, and is said to attain the weight of eight hundred pounds. The claws are long and very strong, but more adapted for digging than for

GRISLY BEAR.—(URSUS FEROX.)

climbing trees; the muzzle is lengthened, narrowed, and flattened; the canine teeth are highly developed, exhibiting a great increase of size and power; and the eyes are small and sunk in the head. Notwithstanding its bulky and unwieldy form, it is capable

of great rapidity of motion; and its strength is so prodigious, that the bison contends with it in vain. Mr. Drummond, in his excursions over the Rocky Mountains, had frequent opportunities of observing the manners of the Grisly Bears, and it often happened that in turning the point of a rock or sharp angle of a valley, he came suddenly upon one or more of them. On such occasions they reared on their hind legs, and made a loud noise like a person breathing quick, but much harsher. He kept his ground, without attempting to molest them; and they on their part, after attentively regarding him for some time, generally wheeled round and galloped off; though, from their known disposition, there is little doubt that he would have been torn in pieces, had he lost his presence of mind and attempted to fly.

The POLAR BEAR. (*Thalassarctos maritimus.*) The accounts given by the early navigators of the size, strength, and ferocity of the Polar Bear are perfectly appalling; but the accuracy of modern investigation has dissipated many of the erroneous ideas which were formerly entertained on the subject, though it is still very clear that this Bear is possessed of immense strength and fierceness. The whole animal is white, except the tip of the nose and the claws, which are jet

POLAR BEAR.
(THALASSARCTOS MARITIMUS.)

black; the ears are small and rounded, the eyes small, the teeth very large, and the limbs extremely large and strong. The shores of Hudson's Bay, Greenland, and Spitzbergen, are its principal places of residence; but it has sometimes been accidentally carried on floating ice as far south as Newfoundland. Their usual food consists of seals, fish, and carcasses of whales; but when on land they prey on various animals, as hares, young birds, &c.; they also eat such roots and berries as they can find. They are said to be frequently seen in Greenland in great droves, allured by the scent of the flesh of seals, and will sometimes surround the habitations of the natives, and attempt to break in. Captain Lyon gives the following account of its hunting the seal: "The bear on seeing his intended prey, gets quietly into the water, and swims until to leeward of him, from whence, by frequent short dives he silently makes his approaches, and so arranges his distance, that, at the last dive, he comes to the spot where the seal is lying. If the poor animal attempts to escape by rolling into the water, he falls into the bear's clutches; if, on the contrary, he lies still, his destroyer makes a powerful spring, kills him on the ice, and devours him at leisure."

During the summer they reside chiefly on the ice-islands, and pass frequently from one to another, being extremely expert swimmers. They lodge in dens, formed in the vast masses of ice, which are piled in a stupendous manner, leaving great caverns beneath: here they breed, and bring forth one or two at a time; and the affection between the parent and the cubs is so great, that they will sooner die than desert each other. During winter they retire, and bed themselves deep beneath the snow, or else beneath the fixed ice of some enclosure, where they pass in a state of torpidity the long and dismal arctic night, appearing only with the return of the sun.

JUGGLER BEAR, or JUNGLE BEAR. (*Prochilus ursinus.*) When this uncouth animal was first brought to England (now more than half a century since), it was taken for a Sloth, and obtained the names of *Bradypus pentadactylus*, and *Bradypus ursinus*, "Five-fingered Sloth," "Ursine Sloth," and "anonymous animal." It is the *Ours jongleur* of the French, who so called it on account of its being a favourite with the Indian mountebanks or jugglers, who rely on the attraction of its ugliness. The Juggler Bear inhabits the mountainous parts of India, its place of retreat being in some cavern. Its short limbs, the depressed air of the head, surmounted by the hillock of a back, and the whole contour of the apparently unwieldy mass, give the idea of deformity. In bulk it is about the size of the Brown Bear. The nasal cartilage is capable of considerable extension, and the lips of protrusion. The muzzle and tips of the paws are a whitish-yellow; and there is a half-collar or Y-like marking on the under side of the neck and breast. With these exceptions, the fur is deep black, with here and there some brown spots, and is rather long, particularly round the head, as the animal grows old. In a state of nature its food consists of fruits, honey, and those destructive insects the white ants. In captivity it appears to be mild, but melancholy.

JUGGLER BEAR.—(PROCHILUS URSINUS.)

MALAY BEAR. (*Prochilus Malayanus.*) This animal is jet black, with the muzzle of a yellowish tint, and a crescent-shaped white mark on the breast. Vegetables form

of diet, but it is said to be extremely of delicacies, and in its native forests is in a great measure upon the honey is there found in considerable abun- It is attracted to the vicinity of man fondness for the young shoots of the nut trees, to which it is very injurious. been frequently taken and domesti- One which Sir Stamford Raffles and when young is thus described by "He was brought up in the nursery the children; and, when admitted to ble, as was frequently the case, gave a of his taste by refusing to eat any fruit

BEAR. — (BRUCHILUS MALAYANUS.)

angosteens, or to drink any wine but ague. The only time I ever knew be out of humour was on an occasion no champagne was forthcoming. He aturally of an affectionate disposition, was never found necessary to chain rise him. It was usual for this bear, t, the dog, and a small blue mountain lory of New Holland, to mess to- and eat out of the same dish. His ite playfellow was the dog, whose g and worrying were always borne and ed with the utmost good humour and iness. As he grew up he became a owerful animal, and in his rambles in ndon he would lay hold of the largest ins, the stems of which he could ly embrace, and tear them up by the

AVER. (*Castor fiber.*) The Beaver Rodent animal, readily distinguished every other quadruped by its broad ntally-flattened tail, which is of a oval form, but rising into a slight ity on its upper surface, and covered rales. The hind feet are webbed, and er with the tail, which acts as a rudder, to propel it through the water with erable facility. It is about three feet exclusive of the tail, which is one foot its colour is a deep chesnut, the hair ine, smooth, and glossy; but it occa- ly varies, and is sometimes found per- black. The incisor teeth are very and hard; so hard, indeed, that they sed by the North American Indians bone and to fashion their horn-tipped , till they were superseded by the in- tion of iron tools from Europe.

ll quadrupeds the Beaver is considered ssessing the greatest degree of natural tinctive sagacity in constructing its habitation; preparing, in concert with others of its own species, a kind of arched caverns or domes, supported by a foundation of strong pillars, and lined or plastered internally with a degree of neatness and accuracy unequalled by the art of any other quadruped. But it should seem, however, that the architecture of the Beaver is nowhere so conspicuous as in the northern parts of America. The favourite resorts of the Beaver are retired, watery, and woody situations. In such places they assemble, to the number of some hundreds; living, as it were, in families, and building their arched receptacles. From this we may perceive to what a degree animals, unassisted either by language or reason, are capable of concurring for their mutual benefit, and of attaining, by dint of numbers, those advantages which each, in a state of solitude, seems unfitted to possess; for if we view the Beaver only in the light of an individual, and unconnected with others of its kind, we shall find that many other quadrupeds excel it in cunning, and almost in all the powers of annoyance and defence. When kept in a state of solitude or domestic tameness, it appears calm and indifferent to all about it; without attachments or antipathies; and never seeking to gain the favour of man, nor aiming to offend him.

BEAVER. — (CASTOR FIBER.)

Few subjects in natural history have more attracted the attention of travellers, or have been more minutely described by naturalists, than the instinctive building operations of the Beaver; and they have accordingly had attributed to them powers so marvellous, as to render ridiculous that which, if regarded merely as a high species of animal instinct, could not fail to command universal admiration. The account given by Buffon, though graphic and amusing in no ordinary degree, is evidently overcharged: we shall therefore take the more sober narration of Hearne: "The situation of the beaver-houses is various. Where the beavers are numerous they are found to inhabit lakes, ponds, and rivers, as well as those narrow creeks which connect the numerous lakes with which this country abounds; but the two latter are generally chosen by them when the depth of water and other circumstances are suitable, as they have then the advantage of a current to convey wood and other necessaries to their habitations, and because, in general, they are more difficult to be taken than those that are built in standing water. They always choose those parts that have such a depth of water as will resist the frost in winter, and prevent it from freezing to the

bottom. The beavers that build their houses in small rivers, or creeks, in which water is liable to be drained off when the back supplies are dried up by the frost, are wonderfully taught by instinct to provide against that evil by making a dam quite across the river, at a convenient distance from their houses. The beaver-dams differ in shape according to the nature of the place in which they are built. If the water in the river, or creek, have but little motion, the dam is almost straight; but where the current is more rapid, it is always made with a considerable curve, convex toward the stream. The materials made use of are drift-wood, green willows, birch, and poplars if they can be got; also mud and stones intermixed in such a manner as must evidently contribute to the strength of the dam; but there is no other order or method observed in the dams, except that of the work being carried on with a regular sweep, and all the parts being made of equal strength. In places which have been long frequented by beavers undisturbed, their dams, by frequent repairing, become a solid bank, capable of resisting a great force both of water and ice; and as the willow, poplar, and birch generally take root and shoot up, they by degrees form a kind of regular planted hedge, which I have seen in some places so tall that birds have built their nests among the branches.

"The beaver-houses are built of the same materials as their dams, and are always proportioned in size to the number of inhabitants, which seldom exceeds four old and six or eight young ones; though, by chance, I have seen double the number. Instead of order or regulation being observed in rearing their houses, they are of a much ruder structure than their dams; for, notwithstanding the sagacity of these animals, it has never been observed that they aim at any other convenience in their houses than to have a dry place to lie on; and there they usually eat their victuals, which they occasionally take out of the water. It frequently happens that some of the large houses are found to have one or more partitions, if they deserve that appellation, but it is no more than a part of the main building left by the sagacity of the beaver to support the roof. On such occasions it is common for those different apartments, as some are pleased to call them, to have no communication with each other but by water; so that, in fact, they may be called double or treble houses, rather than different apartments of the same house.

"So far are the beavers from driving stakes into the ground when building their houses, that they lay most of the wood crosswise, and nearly horizontal, and without any other order than that of leaving a hollow or cavity in the middle. When any unnecessary branches project inward they cut them off with their teeth, and throw them in among the rest, to prevent the mud from falling through the roof. It is a mistaken notion that the wood-work is first completed and then plastered; for the whole of their houses, as well as their dams, are, from the foundation, one mass of mud and wood mixed with stones, if they can be procured. The mud is always taken from the edge of the bank, or the bottom of the creek or pond near the door of the house; and though their fore-paws are so small, yet it is held close up between them under their throat: thus they carry both mud and stones, while they always drag the wood with their teeth. All their work is executed in the night, and they are so expeditious that, in the course of one night, I have known them to have collected as much as amounted to some thousands of their little handfuls. It is a great piece of policy in these animals to cover the outside of their houses every fall with fresh mud, and as late as possible in the autumn, even when the frost becomes pretty severe, as by this means it soon freezes as hard as a stone, and prevents their common enemy, the wolverene, from disturbing them during the winter; and as they are frequently seen to walk over their work, and sometimes to give a flap with their tail, particularly when plunging into the water, this has, without doubt, given rise to the vulgar opinion that they used their tails as a trowel, with which they plastered their houses; whereas that flapping of the tail is no more than a custom which they always preserve, even when they become tame and domestic, and more particularly so when they are startled."

In the more northern climates the habitations of these animals are finished in August, or early in September, when they begin to lay in their stores. During the summer months they regale themselves on the choicest fruits and plants the country affords; but in winter they subsist principally on the wood of the birch, the plane, and some other trees, which they steep in fresh water from time to time. Those who are accustomed to hunt these animals, being perfectly aware that green wood is much more grateful to them than that which is old and dry, place a considerable quantity round their lodgments; and when they sally forth to seize it, either catch them in snares, or take them by surprise. When the frost is very severe, the hunters sometimes break large holes in the ice; and, on the Beavers resorting to these apertures to breathe the fresh air, they either kill them with their hatchets, or cover the holes with large substantial nets. This being done, they undermine and subvert the whole fabric; when the beavers, expecting to make their escape in the usual way, fly with precipitation to the water, and, rushing to the opening, fall directly into the net.

The Beaver is pursued both for its fur, and for the sake of a peculiar odoriferous secretion, termed *castor*, or *castoreum*, which is contained in two little bags, the inguinal glands, each about the size of a hen's egg. This substance, as we find it in the shops, is of a brownish unctuous consistence, has a disagreeable narcotic smell, and a nauseous acrid taste: it was at one time esteemed as possessing considerable medicinal properties, but is now chiefly employed by perfumers. The fur was formerly a most important article of commerce; but the animals have in recent times been exterminated from so many extensive tracts which they once in-

[illegible], that it is now far less considerable than it was half a century ago. To this may be added, that the present custom of using silk and other materials in lieu of beavers' fur in the manufacture of hats, has wonderfully lessened the demand for it, as well as reduced the price. An idea, however, may be formed of the astonishing number of beavers' skins that were formerly made use of, when we state that in 1808, no less than 126,927 were sent from Quebec alone to this country. The flesh of the Beaver is much prized by the Indians and Canadian voyagers, especially when it is roasted in the skin after the hair has been singed off; and in some districts it requires all the influence of the fur-traders to restrain the hunters from sacrificing a considerable quantity of beaver fur every year to secure the enjoyment of this luxury; and Indians of note have generally one or two feasts in a season, wherein a roasted beaver is the prime dish. It resembles pork in its flavour, but it requires a strong stomach to sustain a full meal of it. (*Richardson's Fauna borealis-Americana.*)

Our readers will see that the foregoing account relates to the American Beaver. The European species does not boast of such architectural habits, but lives in burrows along the banks of the Rhone, the Danube, the Weser, and other large rivers in the north of Europe; yet, from some of the descriptions which have been given of them, we are disposed to believe that, considering the materials within their reach, their instinctive skill is not greatly inferior to those who dwell on the other side of the Atlantic. It is believed that at no period were Beavers common in Britain, though the mention of them by some of our earliest historians is a clear proof of their existence here.

BECCAFIGO, or FIG-EATER. (*Sylvia hortensis.*) A migratory song-bird, about the size of a linnet, but with a remarkably short body. It feeds on fruits and berries, and is highly prized by the Italians for the delicacy of its flesh, particularly in autumn, when it is in excellent condition for the table. It is often seen in England in the summer, where it is called the Pettychaps; but it generally returns to a warmer climate in September. It has a lively, loud, and piercing note; but it is seldom seen, as it usually sings from the midst of some closely embowered covert. Its head, back, neck, wings, and tail are generally of a greenish grey, but some more incline to a greenish brown.

BEE. (*Apis.*) The generic name of a family of Hymenopterous insects, [for the classification of which, see APIDÆ.] Of all the insect tribe none have more justly excited the attention and admiration of mankind than the Bee; and yet, although it has engaged the study of naturalists for two thousand years, we still occasionally find, in the economy of this social and industrious little animal, some obscurely known or uncircumstanced fact, which is thought worthy of the labours of those who devote their time and abilities in the pursuit and advancement of this interesting branch of natural science.

The most important species is the HONEY-BEE (*Apis mellifica*), so long celebrated for its wonderful polity, the neatness and precision with which it constructs its cells, and the diligence with which it provides during the warmth of summer a supply of food for the support of the hive during the rigours of the succeeding winter. In its natural state the Honey-bee generally constructs its nests in hollow trees; but so universally is it now domesticated that we rarely find it otherwise than hived in any part of Europe.

Peter Kalm, the Swedish traveller, observes, that the people of North America were unanimously of opinion that the

HONEY-BEE.—(APIS MELLIFICA.)

Honey-bee was unknown in that country before the arrival of the Europeans; but that they were first brought over by the English who settled there. The Indians likewise declared that their fathers had never seen any bees either in the woods or elsewhere, before the Europeans had been several years settled there. This, he says, is further confirmed by the name which the Indians gave them: for, having no particular name for them in their language, they call them *English flies*, because the English first brought them over; but at the time he wrote (nearly a century ago) they flew plentifully about the woods of North America.

Honey and wax are the two valuable articles of commerce for which we are indebted to this useful insect. Now, if we examine the structure of the common Bee, the first remarkable part which presents itself is the proboscis, an instrument serving to extract honey from flowers: it is not formed, like that of other flies, in the shape of a tube, by which the fluid is to be sucked up, but rather like a tongue, to lap it up. When thus lapped out of the nectary, it is conveyed to the crop or honey-bag; where it undergoes but little alteration, and is transferred or disgorged into the cells destined to receive it. While the Bee is busy in extracting the sweets of the flowers, it becomes covered with the farina or pollen of the anthers; this pollen it wipes off with the brushes of its legs, collects every particle together, and kneads it into two little masses, which it lodges on the broad surface of the tibia of each hind leg, where a series of elastic hairs over-arches a concavity, and acts as a sort of lid or covering. Thus employed, the Bee flies from flower to flower, increasing its store of honey, and adding to its stock of kneaded pollen, which is called *bee-bread*. The abdomen is divided into six annulations or rings, which are capable of being contracted or extended at pleasure; and the insect is internally furnished with a honey-bag, a

venom-bag, and a sting. The honey-bag, which is as transparent as crystal, contains the honey which the Bee has brushed from the flowers, the greatest part of which is carried to the hive, and poured into the cells of the honeycomb, while the remainder serves for the Bee's own nourishment. Wax is a peculiar secretion in little cells beneath the scales of the abdomen. It is from honey that the wax, by some internal process, is elaborated. The wax oozes out between the abdominal rings, in the form of little laminæ; it is then worked with the mouth, and kneaded with saliva that it may acquire the requisite degree of ductility for the construction of the comb, which is finished with a substance called *propolis*, a glutinous or gummy resinous matter procured from the buds of certain trees.

The *sting* is composed of three parts; namely, the sheath, and two extremely small and penetrating darts, each of which is furnished with several points, or barbs, which, rankling in the wound, render the sting more painful. This instrument, however, would prove but a feeble weapon, if the Bee did not poison the wound. The sharp-pointed sheath first enters, and this being followed by the barbed darts, the venomous fluid is speedily injected. Sometimes the sting sticks fast in the flesh, and is left behind; but the death of the Bee invariably follows.

Having examined the Bee singly, we now proceed to an inquiry into its habits as a member of a social community. Viewed in this light, we behold an animal active, vigilant, laborious, and disinterested; subject to regulations, and perfectly submissive. All its provisions are laid up for the community; and all its arts are employed in building a cell, designed for the benefit of posterity. Many interesting accounts of the history and economy of the Bee have been published. We know of none, however, so concise and at the same time so explicit, as that which is given by Mr. Newman, in his "Familiar Introduction to the Study of Insects;" and to that source we are indebted for the following observations, marked with inverted commas:—

"A bee-hive contains three kinds of individuals,—a queen, drones, and workers; the queen is a female, and not only the ruler, but, in great part, the mother of the community; the drones are males, and the workers are abortive females. The sole office of the queen appears to be the laying of eggs, and this occupies her almost incessantly, as a single one only is deposited in each cell, thus causing her to be in continual motion; she is slow and majestic in her movements, and differs from the workers in being larger, having a longer body, shorter wings, and a curved sting. The queen is accompanied by a guard of twelve workers, an office which is taken in turn, but never intermitted; in whatever direction she wishes to travel, these guards clear the way before her, always with the utmost courtesy turning their faces towards her, and when she rests from her labours, approaching her with humility, *licking her face, mouth*, and eyes, and appearing to fondle her with their antennæ.

"The drones are all males; they are less than the queen, but larger than the workers; they live on the honey of flowers, but bring none home, and are wholly useless, except as being the fathers of the future progeny; when this office is accomplished, they are destroyed by the workers. A buzzing commences in the hive, the drones and the workers sally forth together, grapple each other in the air, hug and scuffle for a minute, during which operation the stings of the workers are plunged into the sides of the drones, who, overpowered by the poison, almost instantly die.

"The workers are the smallest bees in the hive, and by far the most numerous; they have a longer lip for sucking honey than either of the others; their thighs are furnished with a brush for the reception of the pollen of flowers, and their sting is straight. The workers do the entire work of the community; they build the cells, guard the hive and the queen, collect and store the honey, elaborate the wax, feed the young, kill the drones, &c. The average number of these three kinds of bees in a hive is one queen, 2000 drones, and 20,000 workers. The eggs are long, slightly curved, and of a bluish colour; when laid they are covered with a glutinous matter, which instantly dries, attaching them to the bottom of the cell.

"For eleven months the queen lays only workers' eggs; afterwards, those which produce drones: as soon as this change has taken place, the workers begin to construct royal cells, in which, without discontinuing to lay the drones' eggs, the queen deposits here and there, about once in three days, an egg which is destined to produce a queen. The workers' eggs hatch in a few days, and produce little white maggots, which immediately open their mouths to be fed; these the workers attend to with untiring assiduity: in six days each maggot fills up its cell; it is then roofed in by the workers, spins a silken cocoon, and becomes a chrysalis; and on the twenty-first day it comes forth a perfect bee. The drones emerge on the twenty-fifth day, and the queens on the sixteenth."

When the queen-bee has an inclination to deposit her eggs, she goes forth, accompanied by six or eight working bees as a guard, whose stomachs are filled with honey. She is very deliberate in her motions, and seems to proceed with great caution. She first looks into a cell, and if she finds it perfectly empty, she draws up her long body, inserts her tail into the cell, and deposits an egg. In this way she slowly proceeds till she has dropped ten or twelve eggs, when perhaps feeling exhausted, she is fed by one of the attendant bees, who have surrounded her the whole time. This is done by the bee ejecting the honey from its stomach into the mouth of the queen. When this has been done, the bee goes away, and another takes its place. The operation of laying her eggs again goes on, and is succeeded by the same mode of feeding,—the attendant bees frequently touching the antennæ of the queen

will their own. When the operation of laying the eggs is completed,—and it generally occupies some time,—the queen retires to that part of the hive which is most filled with bees. During her progress the surface of the comb is very little intruded upon, and the queen seems purposely to be left unmolested. Some few of the cells, however, in a brood comb, are passed over by the queen, and afterwards filled either with honey or farina. These serve as deposits of food, from which the neighbouring brood may be fed more readily, as such cells are never covered with wax.—*Jesse.*

"It has been already stated, that the queen, for nearly a year, lays no eggs that are destined to produce queens; it therefore follows, that if any evil befall her, the hive is left without a queen: it sometimes happens that she dies, or is taken away by the owner of the hive, to observe the result. For twelve hours little notice is taken of the loss; it appears not to be known, and the workers labour as usual: after that period, a hubbub commences; work is abandoned; the whole hive is in an uproar; every bee traverses the hive at random, and with the most evident want of purpose. This state of anarchy sometimes continues for two days; then the bees gather in clusters of a dozen or so, as though engaged in consultation, the result of which seems to be a fixed resolution to supply the loss. A few of the workers repair to the cells in which are deposited the eggs of workers; three of these cells are quickly broken into one, the edges polished, and the sides smoothed and rounded, a single egg being allowed to remain at the bottom. When this egg hatches, the maggot is fed with a peculiarly nutritive food, called royal bee-bread, which is never given to any maggots but such as are to produce queens: work is now resumed over the whole hive, and goes on as briskly as before: on the sixteenth day the egg produces a queen, whose appearance is hailed with every demonstration of delight, and who at once assumes sovereignty over the hive. When, under ordinary circumstances, a young queen emerges from the chrysalis, the old one frequently quits the hive, heading the first swarm for the season, and flying to some neighbouring resting-place, is observed by the owner, captured, placed under a new hive, and a new colony is immediately commenced. Before a swarm leaves the hive, sure indications are given of the intended movement: the workers leave their various occupations and collect in groups, especially near the door of the hive, as though in consultation on the important event about to take place.

"As the summer advances many queens are hatched, but the workers do not allow them instant liberty, as severe battles would take place between them and the reigning queen, in which one would be killed: the workers, therefore, make a small hole in the ceiling of the royal cell, through which the captive queen thrusts her tongue, and receives food from the workers. *In this state of confinement the young queen utters a low querulous note, which has been compared to* singing. When the reigning, or a newly-created queen, finds one of these captives, she uses every effort to tear open the cell and destroy her rival; to prevent this, the workers often interpose, pulling her away by the legs and wings; to this she submits for a short time, when, uttering a peculiar cry, called her voice of sovereignty, she commands instant attention and obedience, and is at once freed from her assailants. The cocoons spun by the maggots of the workers and drones completely envelope the chrysalis; but that spun by the maggot of the queen appears imperfect, covering only the upper end of the chrysalis: it has been supposed that they are thus designedly exposed to the attacks of other queens, and their destruction, before emerging, facilitated. When the chrysalis of the queen is about to change to a perfect insect, the bees make the cover of the cell thinner by gnawing away part of the wax; and with so much nicety do they perform this operation, that the cover at last becomes pellucid, owing to its extreme thinness.

"The combs of a bee-hive comprise a congeries of hexagonal cells, built by the bees as a receptacle for honey, and for the nurseries of their young: each comb in a hive is composed of two ranges of cells, backed against each other; the base or partition between this double row of cells is so disposed as to form a pyramidal cavity at the bottom of each. There is a continued series of these double combs in every well-filled hive; the spaces between them being just sufficient to allow two bees, one on the surface of each comb, to pass without touching. Each cell is hexagonal, the six sides being perfectly equal. This figure ensures the greatest possible economy of material and space; the outer edges of the cells are slightly thickened, in order to gain strength; the same part is also covered with a beautiful varnish, which is supposed to give additional strength. The construction of several combs is generally going on at the same time: no sooner is the foundation of one laid, with a few rows of cells attached to it, than a second and a third are founded on each side, parallel to the first, and so on till the hive is filled, the combs which were commenced first being always in the most advanced state, and therefore the first completed.

"The design of every comb is sketched out, and the first rudiments laid by a single bee: this foundress-bee forms a block out of a rough mass of wax, drawn partly from its own resources, but principally from those of other bees, which furnish wax from small sacs, in which it has been secreted, that are situated between the segments of the body of the bee; taking out the plates of wax with their hind feet, and carrying it with their fore feet to their mouths, where it is moistened, masticated, and rendered soft and ductile. The foundress-bee determines the relative position of the combs, and their distance from each other, the foundations which she marks serving as guides to the *ulterior labours* of the wax-working bees, *and of those* which build the cells, giving them the advantage of the margins and

angles already formed. The mass of wax prepared by the assistants is applied by the foundress-bee to the roof or bottom of the hive, and thus a slightly double convex mass is formed: when of sufficient size, a cell is sculptured on one side of it by the bees, who relieve one another in the labour. At the back, and on each side of this first cell, two others are sketched out and excavated: by this proceeding the foundations of two cells are laid, the line betwixt them corresponding with the centre of the opposite cells: as the comb extends, the first excavations are rendered deeper and broader; and when a pyramidal base is finished, the bees build up walls from its edges, so as to complete what may be called the prismatic part of the cell. The cells intended for the drones are considerably larger and more substantial than those for the workers; and being formed subsequently, they usually appear nearer the bottom of the combs: last of all are built the royal cells for the queens: of these there are usually three or four, sometimes ten or twelve, in a hive, attached completely to the central part, but not unfrequently to the edge of the comb. The form of the royal cells is an oblong spheroid, tapering gradually downwards, and having the exterior full of holes: the mouth of the cell, which is always at the bottom, remains open until the maggot is ready for transformation, and it is then closed like the rest.

"When a queen has emerged, the cell in which she was reared is destroyed, and its place is supplied by a range of common cells: the site of this range may always be traced by that part of the comb being thicker than the rest, and forming a kind of knot. The common breeding cells of drones and workers are occasionally made the depositories of honey; but the cells are never sufficiently cleansed to preserve the honey undeteriorated. The finest honey is stored in new cells constructed for the purpose of receiving it, their form precisely resembling that of the common breeding cells: these honey-cells vary in size, being larger or smaller according to the productiveness of the sources from which the bees are collecting, and according to the season."

It is remarkable that all animals which have been long under the protection of man seem to lose a part of their natural sagacity. In those countries where the bees are wild, and unprotected by man, they are always sure to build their waxen cells in the hollows of trees; but with us they appear improvident in their choice; and the first green branch which stops their flight is deemed sufficient for their abode. It does not even appear that the queen chooses the place where they are to alight; for numbers of the swarms when they conceive a predilection for any particular branch, spontaneously settle on it; others follow their example; and at last the queen herself, finding the majority of the swarm convened together, condescends to place herself amongst them. The queen being settled, the rest of the swarm soon flock around her, and in about a quarter of an hour the whole body seems to be perfectly at rest.

When a hive sends out several swarms in a year, the first is always the best as well as the most numerous; for, having the greatest part of the summer before them, they have the more time for making wax and honey, and consequently their labours are the most valuable to their proprietor. Though the swarm is principally made up of the younger Bees, those of all ages generally compose the number of emigrants; and as a single hive sometimes contains upwards of forty thousand inhabitants, such a vast body may well be supposed to work with great expedition.

Among the varied mass of amusing and instructive information with which the volumes of Kirby and Spence abound, we shall make a few condensed extracts ere we close this article:—Bees in their excursions do not confine themselves to the spot immediately contiguous to their dwelling, but, when led by the scent of honey, will go a mile from it, or considerably more; yet from this distance they will discover honey with as much certainty as if it was within their sight. * * * A new-born bee, as soon as it is able to use its wings, seems perfectly aware, without any previous instruction, what are to be its duties and employments for the rest of its life. It appears to know that it is born for society, and not for selfish pursuits; and therefore it invariably devotes itself and its labours to the benefit of the community to which it belongs. Walking upon the combs, it seeks for the door of the hive, that it may sally forth and be useful. Full of life and activity, it then takes its first flight; and, unconducted but by its instinct, visits like the rest the subjects of Flora, absorbs their nectar, covers itself with their ambrosial dust, which it kneads into a mass and packs upon its hind legs; and, if need be, gathers propolis (an unctuous resinous substance, collected from the buds of trees, and used in lining the cells of a new comb, stopping crevices, &c.), and returns unembarrassed to its own hive.

The method of ventilating their hives is thus described:—By means of their marginal hooks, they unite each pair of wings into one plane slightly concave, thus acting upon the air by a surface nearly as large as possible, and forming for them a pair of very ample fans, which in their vibrations describe an arch of 90°. These vibrations are so rapid as to render the wings almost invisible. During the summer a certain number of workers—for it is to the workers solely that this office is committed—may always be observed vibrating their wings before the entrance of their hive; and the observant apiarist will find, upon examination, that a still greater number are engaged within it in the same employment. The station of these ventilators is upon the floor of the hive. They are usually ranged in files that terminate at the entrance; and sometimes, but not constantly, form as many diverging rays, probably to give room for comers and goers to pass. The number of ventilators in action at the same time varies: it seldom much exceeds twenty, and is often more circumscribed. The time also that they devote to this function is longer or

, according to circumstances; some
ers observed to continue their vibra-
r nearly half an hour without rest-
spending the action for not more
n instant, as it should seem to take
. When one retires, another occupies
e; so that in a hive well peopled
s never any interruption of the sound
uming occasioned by this action, by
it may always be known whether it
g on or not.

-EATER. (*Merops apiaster.*) There
ny species of the genus *Merops*, all of
are distinguished by their brilliant
gs, and take their prey, consisting of
asps, gnats, &c., on the wing, like the
e, and, what seems remarkable, with-
ng stung by them. The one we are
o describe is among the most elegant
European birds, and, next to the
and the Kingfisher, may be con-
as the most brilliant in point of
It is a native of the warmer parts
ope, particularly among the islands
Grecian archipelago, and of many
oth of Asia and Africa; but in the
f Europe it is rarely seen. In shape
d resembles the halcyon tribe, and is
the size of a blackbird. The bill is
y curved, sharp-pointed, rather long,
ack; the bridas height red; the crown

ER-EATER.—(MERIDIUS APIASTER.)

head and upper parts of the neck
ck are of an orange-chestnut colour;
rest yellow, the scapulars, lower part
back, and wing-coverts pale yellow,
r less shaded with an admixture of
l green. The smaller quill feathers
ous chestnut, tipped with green; the
ea-green with dusky tips; the rump
ll sea-green, the latter about three
long, the two middle feathers project-
a pointed form, to some distance
the rest. The sides of the head,
the eyes, and the whole under parts
green; from the corners of the bill,
h side of the head, a black streak
across the eyes, curving downwards,
early meeting the tips of a black
k placed across the sweet, and sepa-
the yellow of that part from the sea-
f the under parts. The legs are short,
a reddish-brown colour. It builds
holes in the banks of rivers, forming
a nest of moss, and laying from five or
seven white eggs.

The INDIAN BEE-EATER (*Merops viridis*) is about half the size of the common or European Bee-eater, but the middle tail-feathers are considerably longer. On the upper part of the breast is a crescent-shaped transverse mark, with the horns pointing upwards; the back and lower covert-feathers of the wings are of a parrot-green colour; the rump or coverts of the tail of a bluish-green; the breast and belly of a light green, and the tail is green. The greater quills of the wings are dusky at their tips; the centre quills are of an orange colour, bordered with green, and marked with black spots, the extreme tips being orange; the interior quills next the back are wholly green; the first row of coverts above the quills is orange in the centre, and green on the edges. The bill is long and sharp-pointed, having a downward incurvation; the claws are pretty strong; and the legs and feet of a dusky brown colour. This species is a native of Bengal, parts of Madagascar, &c.

BEETLES. The insects composing the order COLEOPTERA, or Beetles, are almost incredible in point of number, as may readily be supposed when it is stated that between 70,000 and 80,000 species at present exist in the cabinets of collectors. The singular forms and brilliant colours of many of them; the size of their bodies; the solid texture of their integuments, which renders their preservation comparatively easy; and the nature of their habits, which affords every facility for their capture; have combined to render them objects of peculiar attention to those who delight in the science of entomology.

Among the beetle tribe some are very remarkable for projections or horns growing from the head and corslet. The species found in warm climates are generally large and of a formidable appearance, though by no means noxious. They are mostly winged, flying with much rapidity and force; but when on the ground their movements are slow and heavy. The wings of beetles are covered and concealed by a pair of horny cases or shells, meeting in a straight line on the top of the back, and usually having a little triangular or semicircular piece, called the scutel, wedged between their bases. Hence the order to which these insects belong is called *Coleoptera*, a word signifying wings in a sheath. They are all produced from eggs; they then become grubs; afterwards they are changed into chrysalides; and lastly, the beetles, leaving their prisons, sally forth as winged insects in full maturity. The conversion of the first pair of wings into *elytra*, or hard wing-cases, and the complete inclosure of the second pair by these, when the insect is at rest, constitute the distinguishing features of the order. The elytra, when expanded, are of little or no use in flight, generally remaining nearly motionless; when closed, they meet along the back in a straight line, which is called the *suture*. The body of the perfect insect is oval, or nearly so, and the head is pro-

vided with two *antennæ*, composed of eight or ten pieces; the extremities of the antennæ are club-shaped, and composed of plates or joints, either disposed like the leaves of a book, or arranged perpendicularly to the axis, like the teeth of a comb. The eyes are large and protuberant, especially in the carnivorous species, and in those, the slowness of whose habits makes them need quick powers of sight, for the purpose of avoiding their enemies. Of the three segments of the thorax, the corslet greatly surpasses the two others in size; and the chief movement of the parts of the trunk upon one another, is between the first and second segments of the thorax. The two fore-legs of beetles, and even the others, in some instances, are dentated externally, and suited for burrowing. These are the principal characters which distinguish this numerous family; but it is necessary to observe that nearly all of them are subject to some exceptions.

The *larvæ* are soft, flexible, whitish, semicylindric worms, having the body divided into twelve rings, and having a scaly head, armed with strong jaws. They have nine *stigmata*, or breathing-holes, on each side; and the feet, which are six, are scaly. The body is thicker at the posterior than at the anterior extremity, and rounded, almost uniformly curved downwards, so that the larva moves with difficulty over an even surface, and frequently tumbles down. The period during which the larvæ remain in the state of destructive worms, varies in different species; those of some kinds becoming nymphs at the end of several months, and of others not sooner than three or four years. During this period they live in the earth, where they feed upon the roots of vegetables, animal matter in a state of decomposition, &c. It is in this stage of their existence that various species prove exceedingly injurious to farmers and gardeners, from their great numbers and voracity. When about to undergo their change of form, they make an egg-shaped cocoon, from fragments gnawed off wood, &c., which are united by a peculiar glutinous fluid furnished by their bodies. The form of the future beetle is now plainly perceived, the different parts being encased in distinct sheaths. Though the varieties of this genus arising from size and colour are wonderful — some being no larger than a pin's head, while others are several inches in length and circumference, — their most essential difference proceeds from the stages of their existence, some undergoing all their transformations in a few months, and others requiring nearly four years to complete their production.

BELEMNITES. A genus of fossil Cephalopoda, which at different periods have received the names of *Thunderstone*, *Arrowhead*, and *Fingerstone*. The name is derived from *Belemnon* (Gr.), a dart or arrow. They abound in several of the older rocks, especially the lias and oolite; and consist of an interior cone divided into partitions connected by a syphon, as in the Nautilus, and surrounded by a number of concentric layers, made up of fibres radiating from the axis.

BELEMNITE. (B. ACUTUS.) BELEMNITE [RESTORED.]

These layers are somewhat transparent, s when burnt, rubbed, or scraped, give the odo of rasped horn. From the weight of its den internal shell the Belemnite may be suppose to have usually maintained a vertical pos tion; and as its chambered portion was pr vided with a siphuncle analogous to th which we find in the Nautilus, the anim probably had the power of ascending a descending in the water with facility. T animal, of which the Belemnite was t internal "bone," has been proved by M Owen to have been a dibranchiate eigh armed Cuttle-fish, somewhat resembling t recent genus *Onychoteuthis*. This he w enabled to do by access to specimens foun near Chippenham, in Wiltshire, during t excavations that were making for the Gre Western Railway. The species are n extinct.

BELL-BIRD. (*Procnias carunculata*) This is a species of Chatterer, distinguish by a long soft caruncle at the base of t beak; it is white when adult, greenish wh

BELL-BIRD.—(PROCNIAS CARUNCULATA.)

young. It is a native of South America the celebrated Campanero or Bell-bird Guiana — the loud sonorous voice of whic heard from time to time in the depths the forest, during the stillness of mid-da exactly resembles the tolling of a bell.

Mr. Waterton, in his hearty "Wanderin in Demerara," often alludes to it. In a passage he says that it "never fails to attra

…n of the passenger; at a distance those smiles you may hear this …e bird trilling every four or five …s the distant coo'ed bell. From …is the morning the female rescued …mingled cries and strains of the …ane, after this they gradually die …ues shewn to three, all nature is …e a midnight silence, and scarce …eard, saving that of the *companero* …ego; it is then that, oppressed by …eat, the birds retire to the thickest …wait for the refreshing cool of the …

…HOPHON. A genus of fossil …animals of which are unknown, …are now generally supposed to …allied to *Cariacoris*, the structure …hell it resembles.

…Æ. The sixth order of the Mam…e characters of which are, that …-teeth are obtusely truncated, their …d, and their food vegetables. The …f the Horse, Hippopotamus, Hog, …ecora belong to this order.

…E. A genus of fishes remarkable …right green colour of their bones. …are much extended, and furnished …ll teeth, without any others in the …ongs in the pharynx. The body …ng, and covered with scales which …ily visible, except one keeled row …ide, near the under edge of the fish. …ecies.)

…GA. (*Delphinus heros.*) A Ceta…ean, of the size of the Grampus. …habits the seas of the Arctic re…it is sometimes met with even on …ish coasts. (See WHALE.) It is also …own name for the largest species of …(*Acrojonner hunti.*

…TA. A genus of Hymenopterous …ding a species of minute four-winged …ch frequent sandy situations.

…EX: BEMBECIDÆ. A genus …ily of Hymenopterous insects, pe…hair-fingered, and, in some instances, …ch resembling wasps both in size …our. *Bembex rostrata*, an insect …e size of a wasp, is the type of this …and is remarkable for having the …rts of the mouth produced into a …h or proboscis. The female forms …ellindrical burrows in sandy banks, …ell at the end of each, and having …five or six flies, and placed them in …she deposits a single egg in it; then …carefully closed its mouth, she pro…the same manner with another cell. …o are no sooner hatched than the …ovours them; it then changes into …state, and shortly after to the per…t.

…NIDÆ. A family of minute …ous beetles, which generally fre…ung situations, such as the banks of …ches, &c. They are usually of a …ue or green metallic colour, having …ur pale yellow spots on the elytra.

BERNACLE or BARNACLE GOOSE. (*Bernicla leucopsis.*) A bird which inhabits the arctic regions, and in its autumnal and hyemal migrations visits the more temperate regions of England, France, Germany, Holland, &c. It frequents the north-west coasts of this country, and some parts of Ireland, in large flocks during the winter, but is rarely

BERNACLE GOOSE. (BERNICLA LEUCOPSIS.)

seen in the south except in very severe weather. About February it retires to the north to breed, and is then found in Russia, Lapland, Iceland, Spitzbergen, and other high latitudes.

The length of the Bernacle is rather more than two feet. The bill is black, with a reddish streak on each side, and between it and the eyes is a small black streak; the irides dusky-brown; the forehead, sides of the head, and the throat, are of a pure white; the rest of the head, neck, and shoulders black, the upper part of the plumage is marked with blue, grey, black and white; and the legs are black.

The history of this bird has been rendered singularly remarkable by the marvellous accounts which were related in the darker ages concerning its growth; it being a received opinion that the Bernacle was produced in a kind of cirripede, the *lepas anatifera* of Linnæus, growing on rotten ship-timber and other kinds of wood, and trees which, lay under water on the coasts! Among these is Gerard, a famous botanist in his day, whose account is too absurd to give in detail, but perhaps a short extract may be tolerated: "When it is perfectly formed, the shell gapeth open, and the first thing that appeareth is the aforesaid lace or string; next cometh the legs of the bird hanging out; and as it groweth greater, it openeth the shell by degrees till at length it has all come forth, and hangeth only by the bill. In short space after it cometh to full maturity, and falleth into the sea, where it gathereth feathers, and groweth to a fowl, bigger than a mallard, and lesser than a goose, having black legs, and bill or beak, and feathers black and white, spotted in such manner as our magpie!" Again, Sir Robert Murray, in his account inserted in the Philosophical Transactions, says that he

found "an old fir tree on the coast of Scotland, covered with bernacle shells, and that in every shell that he opened he found a perfect sea-fowl; the little bill, like that of a goose; the eyes marked; the head, neck, breast, wings, tail, and feet formed; the feathers every where perfectly shaped, and blackish coloured; and the feet like those of other water-fowl!" Such are some of the wild chimeras that have been handed down concerning the origin of these birds; such the dangerous contagion of the errors of science, where the imagination is allowed to soar beyond the region of common-sense.

There are several other species, some of which we shall briefly describe:—

The RED-BREASTED BERNACLE. (*Bernicla ruficollis.*) This is a beautiful bird, about twenty-two inches in length; the beak is brown, with its hook black; between the beak and the eye is a white space; behind the eyes and on the sides of the neck it is white; the top of the head, the throat, belly, tail, and all the upper parts are deep black; the vent, under tail-coverts, and rump are pure white; but the breast and fore part of the neck are bright red. A band of black extends the entire length of the hinder part of the neck; the greater wing-coverts are tipped with white; and the legs are black. This beautiful bird inhabits the arctic countries of Asia, living on the borders of the Frozen Ocean: it appears periodically in Russia, and occasionally in Germany; but in England it is very rarely seen. A British-killed specimen, however, has been seen by us in the British Museum.

The WHITE-WINGED BERNACLE. (*Bernicla leucoptera.*) This bird varies in length from about thirty-two to forty inches; the head, neck, lesser wing-coverts, and under parts of the body, white; the lower part of the neck behind, and as far as the middle of the back, crossed with numerous dusky-black lines; the two middle tail-feathers black; the rest white; and the legs black. It stands pretty high upon its legs; walks and flies with great ease; and has not that disagreeable cackling cry peculiar to the rest of its kind. The flesh is wholesome and nourishing. It inhabits the Falkland Islands, where it is called the Bustard Goose.

The ANTARCTIC BERNACLE. (*Bernicla Antarctica.*) This is rather smaller than a tame goose; beak narrow, short, and black; the whole plumage of a dazzling snowy whiteness; on the bend of the wing a blunt knob; legs yellow. It inhabits Christmas Sound, in Terra del Fuego. Its flesh is unfit to be eaten.

BEROE. (*Beroë*, or *Cydippe pilcus.*) A small marine animal belonging to the class *Acalepha*, and to which the name *Cydippe* is now very frequently applied. This little animal is nearly of a globular form, somewhat elongated, and about three-fourths of an inch in length. It is composed of a gelatinous substance, strengthened by eight bands of rather firmer texture, which are covered with rows of large vibratile *cilia*, arranged side by side, so as to form narrow plates of a fin-like character. There are, in the most common species, from three to seven cilia in each row, and about twenty rows on each ridge: over these the Beroe has complete control; it can retard or stop their movements at pleasure; and arrest the play of one, two, or more rows, whilst the remainder continue in rapid vibration, and act like so many little paddles. By these means it is capable of swimming through the water with considerable activity, and of changing its course at will. These little animals are of a bright faintly-blue aspect; and the cilia when in motion present vivid iridescent hues. The mouth is situated at one end, which is always directed forward when the animal is in motion, and is then widely dilated. From the stomach, there passes a narrow straight intestine, which terminates at the opposite extremity of the body. When the Beroe is in active movement, therefore, a continual stream of water will enter its mouth, and pass out again behind; and from the minute particles contained in the water, it evidently derives its nourishment; exceedingly minute crustacea may indeed be seen in the transparent stomach for some time after being swallowed. From the posterior part of the body arise two lengthened

BEROE.—(CYDIPPE PILEUS.)

filaments, or tentacula, furnished on one side with cirri, which are sometimes spread out as delicate hairs, and, at others, are spirally convoluted, or coiled like the tendrils of a pea. When the main filaments have been ejected from the body, the little tendrils begin to uncoil. If a Beroe is placed in a vessel of sea-water, its various movements may be watched with interest: sometimes it remains at the bottom, projecting its long filaments upwards; at others, it darts swiftly upwards, drawing its long filaments after it, and alternately retracting and extending them; not unfrequently it remains for some time at the top of the water, till at length, wishing to descend, it turns over, drawing up its filaments suddenly, and then swims, mouth-downwards, to the bottom.

In a small but interesting volume on the

f Arran by the Rev. David
: author makes the follow-
he species *Beröe cucumis*,
of which he had taken
rsions," to that island; the
inches in length, by about
half in diameter. They
own the size of a lemon to
imble, were very beautiful,
mbling an antique pitcher
neck, with a graceful revo-
back at the brim; but the
fficult to assign, as it varied
tions at the animal's plea-
de body has a tinge of pink,
closely set with cilia are
ed, having on each side an
rimson lace. In the larger
ace-work was studded with
l-shaped bodies, like little
by a capillary peduncle.
was at rest, they rested;
lia began rapidly to play,
of water, mixed at times
, to rush through the tubes
all the little orange bodies
notion, as if dancing to the
eres; or, believing in fairies
ers did, one might have
y were lace-bobbins, moved
sible fairy hands, weaving
ce edging with which they
od. Professor Forbes, how-
had conjectured, that they
attached to the placentary
d I doubt not that they are
the motion of the cilia, that
e they may thereby be de-

nes, in describing the beau-
n of the Beröe, has made
philosophical reflections on
at once elegant and forcible.
he, "justly prides himself,
tless triumphs of his intellect
ru elements, at his success in
e means of struggling through
urge, propelled by steam re-
whose paddles urge his vessel
force. But man in this con-
many more, is but a bungling
pared with Nature, when he
s machinery which she like-
yed. Examine well the *beröe*,
paddle-wheels can equal hers.
n pole to pole of this trans-
, like lines of longitude upon
sced at equal distances, are
nds of more consistence than
ions of the body. On these
ed thirty or forty paddles,
es, for such they seem when
h which the little creature
ng. But here the difference
he art of Man and Nature.
his wheels must have much
machinery; the furnace, and
the Herculean arm that makes
ive; but here all these may
ith, for the paddles are them-
nd move themselves at will
se of force as may be needed,
or singly, or in groups, work-
ing with mutual consent in any way required. Thus do they all work equally; the *beröe* shoots along meteor-like, or, if a few relax their energy, wheels round in broad gyrations, or revolves on its own axis with an ease and grace inimitable."

BETTONGIA. A genus of Kangaroos, one of the species of which is called "Forest Rat" by the colonists of Van Diemen's Land (*B. cuniculus*): the end of the tail in this species has a white tuft. Another species (*B. fasciata*) was found by M. Peron on the west coast of Australia, at Dirk Hartog. It is very timid, and constructs galleries among the thick brushwood, by cutting away the lower branches and spines. It is of a brown colour, the lower part of the back being banded across with darker lines.

BIBIO: BIBIONIDÆ. A genus and sub-family of Dipterous insects, distinguished from all the other *Tipulidæ* by having the body and legs shorter and more robust; the antennæ cylindric, monliform, or perfoliated; wings large; and the eyes of the males large and generally contiguous. There is great diversity in the sexes of the genus *Bibio*; all the species are of small size; and their flight is slow and heavy. They are found in damp, marshy places, flying in great swarms, and some of the species are amongst the most troublesome pests to our domestic animals.

BIMANA. [Two-handed.] The term applied by Cuvier to the first or highest order of Mammiferous Animals. It contains only one genus, and one species,—MAN; the sole created Being that can be termed truly *bimanous* and truly *biped*. The whole body of Man is adapted for the vertical position: he walks erect; and thus preserves the entire use of his hands for the arts, while his organs of sense are most favourably situated for observation and the great mental purposes assigned to them by the Great Author of Nature. [See the articles MAMMALIA and MAN.]

BIPELTATA. A name given to those Crustacea which have the carapax divided into two shields, the anterior of which is very large, more or less oval, composing the head; and the second, corresponding with the thorax, is transverse and angulated in its outline, and bears the foot-jaws and the ordinary feet. The body is very flat, membranous, and transparent, with the abdomen small, and without spines to the posterior swimmeret. All the species are inhabitants of the Atlantic and Eastern Oceans.

BIPES. A genus of Reptiles in which the hind feet alone are visible, there being externally a total absence of the anterior extremities, though the rudiments of these members are perceptible under the skin. This genus affords an example of one of those beautiful gradations by which Nature glides from one type of form into another, being intermediate between the Saurians (lizards) and the Ophidians (serpents).

BIRDS. In the following observations on the structure, habits, and uses of Birds, we

have endeavoured to collect, from the writings of various Ornithologists, such particulars as appeared to be best calculated to illustrate the subject in a manner the most simple, natural, and familiar; and in so doing we have made the just and sensible remarks of the ingenious Thomas Bewick the basis on which to build whatever we have thought necessary to add, or to glean from other sources.

Every part of nature is furnished with its proper inhabitants; the woods, the waters, and the depths of the earth, have their respective tenants; while the passive air and those tracts of seeming space too elevated for man to ascend, are traversed by multitudes of feathered beings, whose buoyancy and beauty are alike the objects of our admiration. But the symmetry and elegance discoverable in their outward appearance, although highly pleasing to the sight, are yet of much greater importance when considered with respect to their peculiar habits and mode of living, to which they are eminently subservient. Instead of the large head and formidable jaws, the deep capacious chest, the brawny shoulders, and the sinewy legs of the quadrupeds; we observe the pointed beak, the long and pliant neck, the gently swelling shoulder, the expansive wings, the tapering tail, the light and bony feet; which are all wisely calculated to assist and accelerate their motion through the yielding air. Every part of their frame is formed for lightness and buoyancy; their bodies are covered with a soft and delicate plumage, so disposed as to protect them from the intense cold of the atmosphere through which they pass; their wings are made of the lightest materials, and yet the force with which they strike the air is so great as to impel their bodies forward with astonishing rapidity, whilst the tail serves the purpose of a rudder to direct them to the different objects of their pursuit. The internal structure of birds is no less wisely adapted to the same purposes; all the bones are light and thin, and all the muscles, except those which are appropriated to the purpose of moving the wings, are extremely delicate and light; the lungs are placed close to the back-bone and ribs; the air entering into them by a communication from the wind-pipe, passes through, and is conveyed into a number of membraneous cells which lie upon the sides of the pericardium, and communicate with those of the sternum. In some birds these cells are continued down the wings, and extended even to the pinions, thigh-bones, and other parts of the body, which can be filled and distended with air at the pleasure of the animal.

All birds are furnished with two very strong pectoral muscles on each side of their breast-bones. In quadrupeds, as well as in men, the pectoral muscles are trifling in comparison with those of birds. In the former, the muscles of the thighs and the hinder parts of the body are by far the strongest; but in birds it is far otherwise; the pectoral muscles which give motion to their wings are amazingly strong, whilst those of their thighs are weak and slender. By means of these a bird can move its wings with a degree of strength which is almost incredible; the flap of a swan's wing would break the leg of a man; and a similar blow from an eagle has been known to cause instant death. Such, consequently, is the force of the wing, and such its lightness, as to be inimitable by human art.

The eyes of birds are admirably adapted to vision, by a particular expansion of their optic nerves, which renders the impression of external objects more vivid and distinct. From this peculiar conformation, it appears that the faculty of sight in birds is infinitely superior to that of other animals, and, indeed, is indispensably necessary to their support and security. Were the eye less perfect, the bird, from the rapidity of its motion, would probably strike against almost every object in its way; as well as be totally incapable of discerning its proper food when soaring in its own element.

In mental capacity birds fully equal quadrupeds, and in some respects surpass them. Parrots, starlings, &c., retain in memory many words and phrases which they have been taught, and many singing-birds whole melodies. Their powers of memory seem also to be evinced by the fact that birds of passage, after an absence of six months, or even a longer time, and after travelling thousands of miles, return to their former home; the swallow to her beam, the finch to the tree where last year she reared her young, or where she herself was hatched. The difference between such birds as love to dwell in uninhabited places, secure from persecution, and such as are found in the neighbourhood of men, surrounded by dangers, is a proof that their prudence, cunning, and docility can be awakened and improved.

The voice is a peculiar gift of Nature, by which the greater part of birds are distinguished from all the rest of the animal world. The wind-pipe of birds is composed of entire rings of cartilage, with an exception in the case of the ostrich. At its bifurcation is a glottis supplied with appropriate muscles, called the lower or inferior larynx. It is here that the voice of birds is formed; the vast body of air contained in the air-cells contributes to the force, and the wind-pipe, by its form and movements, to the modification, of the voice. The superior larynx is very simple and unimportant. The gift of song is given to the male birds only, and their notes are mostly an expression of love. They sing only when they are cheerful; in sadness, during rough weather, and in bodily disorders, they are silent. It is commonly said that the gift of song is confined to the birds in northern climates, and that nature, in the warmer regions, has endowed them, instead, with more brilliant colours; but Foster relates, that in Otaheite the birds sing with charming sweetness; and Cook, on his first voyage, found the forests of Queen Charlotte's Sound, in New Zealand, filled with little birds, whose voices sounded like silver bells. To no other animal have such various tones been granted for giving utterance to different feelings: hunger, fear,

ds in brilliancy that of the hen; many species a striking difference is in between their plumage in summer winter; but in most birds two changes rvable; namely, that in the spring, ticates the approach of the breeding when the bird obtains a certain por- new feathers without losing any of ners; and in autumn, which is the g season, when the old feathers are off, and new ones are produced in ses.

may be distinguished, like quadru- to two kinds or classes—granivorous nivorous; like quadrupeds too, there e that hold a middle nature, and par- both. Granivorous birds are fur- with larger intestines, and propor- longer, than those of the carnivorous Their food, which consists of grain of sorts, is conveyed whole and entire e first stomach or craw, where it es a partial dilution by a liquor se- from the glands and spread over its ; it is then received into another spe- stomach, where it is further diluted; hich it is transmitted into the gizzard stomach, consisting of two very muscles, covered externally with a ous substance, and lined with a thick ne of prodigious power and strength: place the food is completely triturated dered fit for the operation of the gas- ices. The extraordinary powers of zard in comminuting the food, so as ure it for digestion, would exceed all ity, were they not supported by in- ertible facts founded upon experi- In order to ascertain the strength stomachs, the ingenious Spalanzani he following among many other cu- and interesting experiments:—He welve small lancets, very sharp, in a f lead, which was forced down the structure of rapacious birds and carnivorous quadrupeds is obvious; both of them are provided with weapons which indicate destruction and rapine; their manners are fierce and unsocial; and they seldom live together in flocks, like the inoffensive granivorous tribes. When not on the wing, rapacious birds retire to the tops of sequestered rocks, or to the depths of extensive forests, where they conceal themselves in sullen and gloomy solitude.

Without the means of conveying themselves with great swiftness from one place to another, birds could not easily subsist; the food which Nature has so bountifully provided for them is so irregularly distributed, that they are obliged to take long journeys to distant parts in order to gain the necessary supplies: at one time it is given in great abundance; at another it is administered with a very sparing hand; and this is one cause of those migrations so peculiar to the feathered tribes; the other chief causes are, the want of a proper temperature of air, and a convenient situation for the great work of breeding and rearing their young. Such birds as migrate to great distances are alone denominated "*birds of passage*;" but most birds are, in some measure, birds of passage, although they do not migrate to places very remote from their former habitations. At particular times of the year most birds remove from one country to another, or from the more inland districts towards the shores: the times of these migrations or flittings are observed with astonishing order and punctuality; but the secrecy of their departure, and the suddenness of their re-appearance, have involved the subject of migration in general in great difficulty. Much of this difficulty arises from our not being able to account for their means of subsistence during the long flights of many of those birds which are obliged to cross immense tracts of water

liar to instinctive knowledge, to discover the route they are to take, from the appearance of the atmosphere, the clouds, the direction of the winds, and other causes; so that, without having recourse to improbable modes, it is easy to conceive, from the velocity of their speed alone, that most birds may transport themselves to countries lying at great distances, and across vast tracts of ocean.

At the approach of spring, birds begin to pair, and to provide for the support of their future progeny; and the loudest notes, on such occasions, generally proceed from the tuneful throats of the males, while the females express their consent in short interrupted twitterings. The compacts then entered into between the two sexes are, for the season at least, faithfully observed: but many birds live together for years with inviolable fidelity; and when one of them dies, the other does not long survive. We are of course not speaking of the poultry in our yards; but of those denizens of the air where Nature retains her unadulterated simplicity; where the number of males is generally equal to that of the females; and where every little animal seems no less pleased with its progeny than wedded to its mate.

The Nests of Birds now claim our notice; for they are constructed with such exquisite art, as to exceed the utmost exertion of human ingenuity to imitate them with perfect success. Their mode of building, the materials they make use of, as well as the situations they select, are as various as the different kinds of birds, and are all admirably adapted to their several wants and necessities. Birds of the same species, whatever region of the globe they inhabit, collect the same kind of materials, arrange them in the same manner, and make choice of similar situations for fixing the places of their temporary abodes. Every part of the world furnishes materials for the aerial architects: leaves and small twigs, roots and dried grass mixed with clay, serve for the external; whilst moss, wool, fine hair, and the softest animal and vegetable downs, form the warm internal part of these commodious dwellings. On this subject the author of "The Journal of a Naturalist" thus writes: Birds that build early in the spring seem to require warmth and shelter for their young; and the Blackbird and the Thrush line their nests with a plaster of loam, perfectly excluding, by these cottage-like walls, the keen icy gales of our opening year: yet, should accident bereave the parents of their first hopes, they will construct another, even when summer is far advanced, upon the model of their first erection, and with the precautions against severe weather, when all necessity for such provision has ceased, and the usual temperature of the season rather requires coolness and a free circulation of air. The House-sparrow will commonly build four or five times in the year, and in a variety of situations, under the warm eaves of our houses and our sheds, the branch of the clustered fir, or the thick tail hedge that bounds our garden, &c.; in all which places, and without the least consideration of or season, it will collect a great mas straw and hay, and gather a profusi feathers from the poultry-yard to lin nest. This cradle for its young, whe under our tiles in March or in July, the parent bird is panting in the con heat of the atmosphere, has the same visions made to afford warmth to the be yet this is a bird that is little affecte any of the extremes of our climate. Wood-pigeon and the Jay, though they their fabrics in the tall underwood in open air, will construct them so slig and with such a scanty provision of rials, that they seem scarcely adequa support their broods, and even their may almost be seen through the loo connected materials: but the Goldfinch, inimitable spinner, the Arachne of the g forms its cradle of fine mosses and lic collected from the apple or the pear compact as a felt, lining it with the of thistles besides, till it is as warm a texture of the kind can be, and it boc a model for beautiful construction. golden-crested Wren, a minute creature, fectly unmindful of any severity in winter, and which hatches its youn June, the warmer portion of our year builds its most beautiful nest with utmost attention to warmth; and, weaving small branches of moss with web of the spider, forms a closely-compa texture nearly an inch in thickness, li it with such a profusion of feathers, sinking deep into this downy accumula it seems almost lost itself when sitting the young, when hatched, appear s with the warmth of their bedding and heat of their apartment; while the W throat, the Black-cap, and others, will hatch their young nearly at the period, or in July, will require nothi the kind. A few loose bents and goose- rudely entwined, with perhaps the lu of some scattered hairs, are perfectly cient for all the wants of these; yet are birds that live only in genial tem tures, feel nothing of the icy gales tha natural to our pretty indigenous artist flit from sun to sun, and we might su would require much warmth in our cli during the season of incubation; but not so. The Greenfinch places its nest little regard to concealment; its fabr slovenly and rude, and the materials o coarsest kinds; while the Chaffinch, above it in the elm, hides its nest with tious care, and moulds it with the utmos tention to order, neatness, and form. bird must have a hole in the ground another, a crevice in a wall, or a chink tree, is indispensable. The Bullfinch quires fine roots for its nest; the grey catcher will have cobwebs for the outw of its shed. All the *parus* tribe, except individual above mentioned, select hollow in a tree or cranny in a wall; sheltered as such places must be, yet they collect abundance of feathers and materials for their infants' bed. Ex examples might be found of the distinct

difference of climate sometimes oc-
west alterations in the construction
ests of birds. Some water-fowl strip
m from their own breasts, for the
of lining their nests with greater
. In general, however, all birds,
tching, resort to those climates and
here their food is found in the great-
ty. Aquatic birds, as well as the
of the land kinds, select such situ-
s are most remote from man; their
general, being different from that
cultivated by human labour. Some
hich regard the serpent as their dead-
, build their nests depending from
ughs, and form their entrances from
thereby equally securing them from
ent and the monkey tribes: but small
hich feed upon fruits and corn, make
every precaution to conceal their
en man; while the great birds, re-
om human society, employ every
render theirs inaccessible to wild
nd vermin.

e the female is hatching, nothing
ed her patience; neither the calls of
, nor the near approach of danger,
apable of driving her from her nest.
fat when she begins to sit, before
g of incubation is expired she is
reduced to little more than skin and
While the young continue in the
e old ones provide them with a proper
of food; and, that no individual may
rlooked, each is served in its turn.
perceive that man has been busy
eir nest, or has handled their little
ey abandon the place by night, and
their brood a more secure retreat.
the whole family are fully plumed,
pable of avoiding danger, they are
h in fine weather, and taught the art
ly of providing for their own sub-
, by being conducted to those places

would render it unfit for the purposes of life and health. That active little bird, the Tom-tit, which is generally supposed hostile to the young and tender buds that appear in the spring, when attentively observed, may be seen running up and down among the branches, and picking up the eggs of insects, or the small maggots or worms that are concealed in the blossoms, and which would effectually destroy the fruit. As the season advances, various other small birds, such as the Redbreast, Wren, Hedge-warbler, White-throat, Redstart, &c., are all engaged in the same useful work, and may be observed examining every leaf, and feeding upon the insects which they find beneath them. These are a few instances of that superintending providential care which is continually exerted in preserving the various ranks and orders of beings in the scale of Animated Nature; and although it is permitted that myriads of individuals should every moment be destroyed, not a single species is lost, but every link of the great chain remains unbroken.

The only disease, if it can be termed one, to which birds are subject, is moulting, or the operation of changing their plumage, during the continuance of which they are sickly and disordered, and many die. This process, which occurs every year, appears to be performed in the following manner:—When the feathers have attained their full size, the quill part, nearest the bird, grows harder, and shrinks in its diameter, thus gradually compressing, and finally obliterating the vessels which supply it with nourishment, and thus becomes an extraneous body which is at last loosened in its socket, and falls off. Whilst these changes are taking place, the rudiments of the new feather are forming beneath, which rapidly attains its natural size, after it has been protruded through the skin, a process which, it will be

rope; and these are generally either clothed with warm coats of feathers, or have large quantities of fat lying beneath the skin, to defend them from the rigours of the climate. In all climates, however, birds are longer lived than quadrupeds of the same climates: indeed, it may be said, that, in proportion to the size of their bodies, birds possess more vitality, and live longer, than either man or quadrupeds.

Naturalists have arranged birds in various orders, founded on the organs of manducation and prehension. The following is that of Cuvier:—1. Birds of Prey (*Accipitres*, Lin.); distinguished by their crooked beak and claws, by means of which they are enabled to overcome and prey upon other birds, and even the weaker quadrupeds. They hold the same rank among birds as the *Carnivora* among quadrupeds. They all have four toes, and the nails of the great and middle toes are the strongest. They form two families, the *diurnal* and *nocturnal*, the first having nostrils inserted in a naked cere, three toes before and one behind, without feathers; eyes directed sideways: the second having nostrils at the anterior edge of the cere, which is more or less covered with stiff hairs; the external toe capable of being turned behind; eyes large, directed forwards.—2. Passerine Birds (*Passeres*). This is the largest class, and embraces all birds which do not belong to the other five. They present a great resemblance in their structure, and the genera are so closely allied that it is difficult to distinguish between them. They may, however, be separated into two great divisions: 1. Those with the exterior toe united to the middle one, by one or two joints only; and, 2. Exterior toe almost as long as the middle one, and united to it as far as the last joint but one.—3. Climbers (*Scansores*). Birds whose exterior toe directs itself backwards like the great toe, affording a very solid support, by which some of them cling to and climb the trunks of trees.—4. Gallinaceous Birds. (*Gallinacew.*) These have a heavy gait, a short flight, a medium-sized beak, the upper mandible vaulted, nostrils partly covered by a cartilaginous scale, toes generally dentated at the edges, with short membranes between those in front.—5. Waders (*Grallæ*) may be recognised by the nudity of the lower part of their thighs; very frequently by the length of their legs; and generally by some little web, at least, between the external toes. In flying, they extend their legs behind them, contrary to the habit of other birds, who draw them up close to the body.—6. Web-footed Birds (*Palmipeda*) are strongly characterised by their feet, formed for swimming, being affixed to the hinder part of their body; with very short and compressed tarsi; and palmated between the toes.—For much information on the habits of Birds we would refer to the pages of Loudon's Magazine of Natural History, and to "The Zoologist;" while the great work, "Gray and Mitchell's Genera of Birds," contains an immense supply of matter in illustration of this important and interesting class. In Macgillivray's "British Birds" much valuable information is given by the able

fessor of Marischal College, Aberdeen.

BIRGUS. A genus of long-tailed C taceous animals, of which the Purple-c (*Birgus latro*) is the largest. This sp of land-crab is a native of Amboyna, other neighbouring islands, where it is to inhabit the fissures of rocks or hol the earth by day, and to come forth night to seek its food on the beach. S say it climbs cocoa-nut trees in the nig get the cocoa-nuts; and it is certain it subsist on them, as well as on some kinds of nuts, when more favourite is not easily attainable. When prop dressed, this animal is regarded as an cellent dish. [See Crab.]

BISON. There are two kinds of Bi one of them European, which is now ve very scarce; the other American, which exists in vast numbers.

The EUROPEAN BISON (*Bos bon* is as large as a bull or ox; and in his s state of wildness, is distinguished not onl his size and the fleshy protuberance o shoulders, but by the superior depth and s giness of his hair, which about the head, n and shoulders, is sometimes so long as al to touch the ground. The head is small; eyes are red and fiery; the forehead is w and the horns are short, extremely str sharp-pointed, and stand distant from e other at their bases, like those of the com bull. His colour is a dark rufous bro sometimes nearly black; his limbs rem ably strong; and his whole aspect in highest degree savage and gloomy. principal European regions where this an is at present found, are the marshy fores Poland, the Carpathian mountains, and thuania. Its chief Asiatic residence is neighbourhood of Mount Caucasus. animal is very scarce, and would prob soon be extinct but for the strict orde the emperor of Russia, who will not pe any to be shot in his dominions. This r arch has presented a stuffed specimen skeleton of one to the British Museum.

The AMERICAN BISON. (*Bos Ba camus.*) The American Bison, most quently called "the Buffalo," differs t the European chiefly in being larger, shaggy, in having a more protuberant be over the shoulders, and by the length finesse of its woolly hair. The hum oblong, diminishing in height posteri and gives a considerable obliquity to outline of the back. The hair over head, neck, and fore-part of the bod long and shaggy, forming a beard bene the lower jaw, and descending below knee in a tuft. The hair on the top o head rises in a dense mass, nearly to tips of the horns, and, directly on the f is curled and matted strongly. The num of this species still existing are surprisi great, when we consider the immense struction which annually takes place. T were once extensively diffused over the w is now the territory of the United St but they are no longer found except in

their hunt, and dried in their winter villages. Secondly, the skin is put to various uses; it forms the material of their lodges, of their bales for packing the meat, of their bed by night, and their clothing by day; the coarser parts they make into saddles, or cut into laryettes, or halters; and, more than all, it is now their chief article of trade with the whites, and thus is the source whence they must derive blankets, knives, beads, and every other produce of civilization. Thirdly, they use the sinews as strings to their bows, and the smaller fibres instead of twine or thread; the brains serve to soften and dress the skins, while the hoof, at the end of the shank bone, is made to answer the purpose of a mallet. Fourthly, the bones are not less useful: some of them being serviceable as scrapers or close chisels: others are pointed, and used with the finer fibres as needle and thread; and the ribs, strengthened by some of the stronger fibres, are made to furnish the bow with which other Buffaloes are to be destroyed. This last is the triumph of Indian ingenuity. The first bow that I saw constructed in this manner caused so much surprise and admiration, that I offered nearly the value of a horse for it, but was refused. When I add to the foregoing particulars, that on the barren prairies the Indians frequently depend upon the Buffalo (dung) for their fuel, and on its bladder for the means of carrying water, it will not be denied that the animal is essential to their existence; and when the Buffalo is exterminated, the Indian of the Prairies must perish."—For further particulars we must refer our readers to the delightful pages of Sir John Richardson, M. D. (*Fauna Boreali Americana*), and of Mr. Catlin.

BITTERN. (*Botaurus.*) The Bitterns are a subgenus of the family of Herons, residing in woody swamps and marshy places, and feeding upon aquatic animals, frogs, lizards, insects, &c. The COMMON BITTERN (*Botaurus stellaris*) is about two feet six inches in length, or nearly as large as the common heron, but its legs are stronger; body more plump and fleshy; and its neck is more thickly clothed with feathers. The beak is strong at the base, straight, sharp on the edges, and gradually tapers to an acute point; the upper mandible is brown, the under inclining to green; mouth wide, the gape extending beyond the eyes, with a dusky patch at each angle; irides yellow. The crown of the head is somewhat depressed, and covered with long black feathers; and the neck feathers, which it can raise at pleasure, are long and loose. The general colour of the plumage is dull pale yellow; the back and wings are marked with black zig-zag lines, bars, and streaks, upon a ground shaded with rufous and yellow; and the greater coverts and quills are regularly barred with black. The tail is very short; the legs are pale green; the toes and claws very long and slender. The female is somewhat smaller than the male, the plumage not quite so bright, and the feathers on the neck shorter. She makes an artless nest, composed chiefly of the withered stalks and leaves of the high coarse herbage, in the midst of which it is placed, and lays from four to six eggs of a greenish white.

The Bittern is a shy solitary bird; it is never seen on the wing in the day-time; but sits generally with the head erect, hid among the reeds and rushes of extensive marshes, from whence it will not stir unless disturbed by the sportsman. When it changes its haunts, it removes in the dusk of the evening, and then, rising in a spiral direction, soars to a vast height. It flies in the same heavy manner as the heron, and might be mistaken for that bird, were it not for the singularly resounding cry which it utters from time to time, while on the wing; but this cry is feeble when compared with the hollow booming noise which it makes during the night, in the breeding season, from its swampy retreats. From the loudness and solemnity of its note, an erroneous notion prevails with the vulgar that it either thrusts its bill into a reed, which serves as a pipe for swelling its note beyond its natural pitch, or that it immerges its head in water, and then produces its boomings by blowing with all its might.

When attacked by the buzzard, or other bird of prey, the Bittern defends itself with great courage, and generally beats off such assailants; neither does it betray any symptoms of fear when wounded by the sportsman, but eyes him with a keen undaunted look, and, when driven to extremity, will attack him with the utmost vigour, wounding his legs, or aiming at his eyes with its sharp and piercing bill. Bitterns reside permanently in England, and in most of the temperate parts of the continent; but in colder climates they are migratory. They were formerly held in great esteem at the tables of the wealthy.

There are several other species of this bird, some of them natives of hot and others of cold climates; but they all resemble the above in its distinguishing characteristics, frequenting the same situations, making their nests on the ground, &c., but differing materially in the colours of their plumage as well as in size.

BIVALVE. The name given to a class of shells composed of two pieces or parts; which, by means of a proper connection by hinges, open and shut, and perform all other functions necessary to the economy or modes of life of the animals included in them. The Molluscs inhabiting them are chiefly distinguished from the other classes by the absence of a visible head or neck, and the consequent deprivation of the organs of sight and hearing; they possess a mouth, but it is a mere opening in the body, with jaws or teeth. The branchiæ are large, placed on each side, between the body and the mantle. The lobes of the mantle are fringed round the edge with numerous filaments, which are very sensitive, and in constant activity. None of the genera are terrestrial, their construction not affording them sufficient powers of locomotion for finding their food on land, and confining them to the water, whether salt or fresh, or to the sands on the coasts. As

instances we may mention the Oys-
el, Cockle, &c.

CHA, or VIZCACHA. (*Calomys*
) A Rodent animal, somewhat
g a rabbit, but with larger gnawing
l a long tail: it has, however, only
s behind, like the Agouti. Near
yres they are exceedingly common.
said to live on roots; which, from
strength of their gnawing teeth,
kind of localities they frequent,
bable. As in the case of the rabbit,
es are commonly placed together.
ening the Bizcachas come out in
and there quietly sit on their
They do not wander far from
rows: they run very awkwardly,
hurrying out of danger, from their
ails and short front legs, much re-
ent rats. Their flesh, when cooked,
ite and good, but it is seldom used.
ars the skins of the Bizcacha have
market in England, on account of

CBIRD. (*Turdus merula.*) A well-
ng-bird, about ten inches long,
rp-toned warblings are not to be
for those of any other inhabitant
oves. The plumage of the male
ogether black, but that of the fe-
ather of a brown or dark russet
he bill, inside of the mouth, and
the eyelids, are yellow, as are also

CBIRD.—(TURDUS MERULA.)

of the feet. The males during the
resemble the females so much as
y to be distinguished from them;
that, they assume the yellow bill
distinguishing marks of the sex.
kbird is a solitary bird, frequenting
d thickets, chiefly evergreens, espe-
ove there are perennial springs,
gether afford it both shelter and
e. They feed on berries, fruit,
nd worms; but never fly in flocks
shes. They pair early, and are
e first who render the groves vocal:
f the Blackbird, indeed, during the
d summer, when heard at a dis-
ted, and enlivening; but when the
ndered be a sage, its song is too loud
ming. They build in bushes or
, and lay four or five eggs, of a
en, marked irregularly with dusky
he young birds are easily tamed,
be taught to whistle a variety of
They are restless and timorous,
rmed, and difficult of access. We
occasionally hear of *albinos*, or white black-birds! but they are so rare as to be regarded in the light of great curiosities.

BLACK-CAP. (*Sylvia atricapilla*). This is a small song-bird, whose notes are so sweet and full that it has obtained the name of the mock-nightingale. The crown of the head, in the male, is black; the hind part of the neck, light ash colour; back and wings, olive grey; throat, breast, and belly, more or less silvery white; legs bluish, and claws black. The Black-cap is migratory, visiting us about the middle of April, and retiring in September. Orchards and gardens are its favourite haunts; and it builds its slightly constructed nest in some low tree or shrub,

BLACK-CAP.—(SYLVIA ATRICAPILLA.)

lining it with the fibres of roots thinly covered with horse hairs: the eggs are reddish brown mottled with a deeper colour, and sprinkled with dark spots. The Black-cap is naturally a very shy bird; and although while banqueting on currants, raspberries, or any of its favourite fruits, it seems to forget its usual timidity, and suffers itself to be looked at, yet at other times it avoids observation as much as possible, and carefully hides itself in the foliage from all familiarity and confidence. Its song, however, never fails to attract attention; for although its modulations are in general short and desultory, yet when this little warbler sits calmly, and is earnestly engaged in singing, it gives utterance to a pleasant and gentle harmony, superior perhaps to any of our other songsters, the nightingale excepted.

BLACK-COCK, and BLACK-GAME. [See GROUSE.]

BLAPS: BLAPSIDÆ. A genus and family of Coleopterous insects; the type of which is the species *Blaps mortisaga*: it is black, but little shining, and the tip of the elytra forms a short obtuse point. It is a very common British insect, found in dark, damp, and dirty places about houses. In Mr. Westwood's "Introduction to the Modern Classification of Insects," the following extraordinary fact is related:—Several instances have been noticed, in which the larvæ of the common species *Blaps mortisaga*, or Church-yard Beetle, has been discharged from the stomach. Of these, the most remarkable account is that published by Dr. Pickells in the *Trans. of Associated*

CHURCH-YARD BEETLE.
(BLAPS MORTISAGA.)

Physicians in Ireland, of a case of a woman, aged twenty-eight, who emitted as many as two thousand larvæ of this insect at various times, as well as one pupa and one imago; and which probably originated in an absurd and superstitious practice, which she had for some time followed, of drinking daily for a certain time a quantity of water mixed with clay, taken from the graves of two Catholic priests, and eating large pieces of chalk. One of these beetles was immersed repeatedly into spirits of wine, but revived after remaining therein all night, and afterwards lived three years."

BLATTIDÆ. A family of voracious Insects, of the order *Orthoptera*, of which the troublesome Cockroach (*Blatta orientalis*) is a well-known example. These very destructive and disagreeable insects form one of the principal inconveniences of hot climates. They devour various animal and vegetable substances; and some species have a highly unpleasant smell, which is apt to remain on such articles as they have passed over. The largest of the genus is the

BLATTA GIGANTEA of Linnæus, which is a native of many of the warmer parts of Asia, Africa, and South America. The following description of them is said, by those who have visited the countries where they abound, to be by no means overcharged: "They plunder and erode all kinds of victuals, drest and undrest, and damage all sorts of clothes, especially such as are touched with powder, pomatum, and similar substances; everything made of leather, books, paper, and various other articles, which if they do not destroy, at least they soil, as they frequently deposit a drop of their excrement where they settle, and some way or other by that means damage what they cannot devour. They fly into the flame of candles, and sometimes into the dishes; are very fond of ink and of oil, into which they are apt to fall and perish; in which case they soon turn most offensively putrid: so that a man might as well sit over the cadaverous body of a large animal as write with the ink in which they have died. They often fly into persons' faces or bosoms, and their legs being armed with sharp spines, the pricking excites a sudden horror not easily described. In old houses they swarm by myriads, making every part filthy beyond description wherever they harbour, which in the day-time is in dark corner clothes, in trunks, boxes, and, in sh place where they can lie concealed timber and deal houses, when the retired at night to sleep, this inse other disagreeable properties, has t of making a noise which very reso bles a pretty smart knocking knuckle upon the wainscotting. T Gigantea, in the West Indies, is frequently known by the name of t mer. Three or four of these noisy will sometimes be impelled to as another, and cause such a drumm that none but those who are very g ers can rest for them. What is agreeable, those who have not gaun are sometimes attacked by them sleep: the sick and dying have tremities attacked, and the ends o and fingers of the dead are frequen ped both of the skin and flesh."

The BLATTA ORIENTALIS, mon black Cockroach, which is f called in our country by the errone of the *black beetle*, is supposed to h originally from Asia; but of that some little doubt. In its mature male has wings extending only length of the body; the female rudimentary wings; her eggs, w about sixteen in number, are enclo oblong case, which she carries at her at first, fixed to the abdomen of gum. The nocturnal habits and of this species are too well known t any description.

The BLATTA AMERICANA, o can Cockroach, is of a light ch reddish colour, and is extremely in the warmer parts of America West India islands. It is somewh than the black or eastern Cockroac Blattæ lay their eggs in heaps, them all round in webs or bags, manner of some spiders. When th hatched, the young ones appear quit and leave their shells almost instant Being at first no larger than ants capable of penetrating through the apertures into boxes and chests, w destroy everything within their reac arrived at their full growth, they skins, which burst on their backs; the Blattæ, or Cockroaches, are formed: their wings are at first whitish, and they soon become red; heads, horns, and the rest of the retain the same shapes and colour possessed before the exuviæ were st

BLEAK. (*Cyprinus alburnus.*) T copterygious fish belongs to the Ca and is very common in many of rivers: the length about five or s shape slender, with the body mo pressed: colour bright silvery, the b green; fins pellucid; scales deciduou tail forked. Bleaks generally keep in large shoals; and at certain sea are observed to tumble about near t of the water as if incapable of swi

SCRAE.—(OPHIDIUM ALNUMEUS.)

...considerable distance; but in a short ...they recover, and presently disappear. ...from the scales of this fish that the ...ful silvery matter used in the pro...tion of artificial pearls is chiefly taken: ...bright-scaled fishes may, however, be ...for the same purpose.

...ENNY. (*Blennius.*) A genus of small ...thopterygious fishes, living in small ...s, and frequenting rocky coasts, where ...may be often found in pools of water ...y the tide. The Blennies have one ...marked character in their ventral fins, ...ed before the pectorals, and having ...two rays each. The stomach is slender, ...no cul-de-sac; the intestine large, ...ut cæca, and there is no air-bladder. ...orm is elongated and compressed, and ...is but one dorsal, composed almost ...ly of jointless but flexible rays. Their ...is covered with a caucous secretion; ...have teeth equal and closely set, form...only a single row in each jaw; their ...is blunt, their profile vertical, and their ...le short. There are several species; a ...description of three, however, will be ...e.

...e CRESTED BLENNY. (*Blennius ga...*) This species is about four or five ...s in length, and is found about the ...y coasts of Great Britain. The body is ...compressed, smooth, and slippery; ...r yellowish brown, freckled with darker ...ed specks; head furnished on the ...le with a transverse finny appendage, ...h can be either raised or depressed at ...ure; and between the eyes is a small ...gular prominence, pointing backward, ...red about the edges; ventral fins very ...l and short, dorsal shallow, running ...the hind part of the head to the tail, ...h is of a round shape, and the vent ...ted under the ends of the pectoral fins.

...e OCELLATED BLENNY, or BUT...RFLY FISH. (*Blennius ocellaris.*) This ...small species is a native of the Medi-

...ELLATED BLENNY, OR BUTTERFLY-FISH. (BLENNIUS OCELLARIS.)

...ranean, but is occasionally found in the ...th of England by dredging. It has two ...ies in the dorsal, the first marked with a round black spot surrounded by a white ring, and then a black one. It lives among the rocks and sea-weed, and is believed to subsist on minute Crustacea and Mollusca.

The GATTORUGINOUS BLENNY (*Blennius Gattorugin*) is about six inches long; the body smooth, and compressed on the sides; the belly rather prominent, and the vent situated as in the crested Blenny. The head is grooved between the eyes, and furnished with two branched membranes, situated just above the eyelids, a distinguishing mark of the species. The pectoral fins, which are broad and rounded, consist of fourteen rays; the dorsal fin has thirty-three; the ventral two; the anal twenty-three; and the tail, which is slightly rounded, has eleven rays. This fish is of a dusky colour, marked across with wavy lines. It has occasionally been found on our western coasts, but is not very common.

BLEPHARIS. A genus of Acanthopterygious fishes, distinguished by their having long filaments to their second dorsal and to their anal fin rays. One species of the *Blepharis*, inhabiting the West Indian seas, is known under the appellation of the *Cobbler-fish*, probably on account of the long thread-like appendages for which it is so conspicuous.

BLEPSIAS. A genus of Acanthopterygious fishes, the generic characters of which are,—compressed head, cheeks mailed, fleshy barbels under the lower jaw, gills with five rays, and one dorsal fin divided into three unequal lobes.

BLETHISA. A genus of carabidous Coleopterous insects, consisting of three known species, only one of which has been found in this country: this is about half an inch long, of a rich bronze or brassy hue, and with numerous indented points on the elytra; it frequents marshy situations, and is often found crawling upon willow trees.

BLIND-WORM, or SLOW-WORM. (*Anguis fragilis.*) A species of viriparous reptile belonging to the third subgenus of the family *Anguidæ*, which may be said to form the connecting link between the lizards and the true serpents. Though somewhat formidable in appearance, the Blind-worm is perfectly innocuous. Its usual length is about eleven inches; the head is small; the eyes are also small, and the irides red; the neck is slender, and thence the body enlarges, continuing of equal bulk to the tip of the tail, which ends bluntly, and is as long as the body. The general colour of the back is cinereous, marked with very small lines of minute black specks; the scales are small, smooth, and shining, of a silvery yellow on the upper parts, and dusky beneath; the tongue is broad and forked; and the teeth are very small and numerous. The Blind-worm feeds on earthworms, insects, &c., and among the uninformed has the character of possessing the most deadly venom. The motion of this reptile is slow; from which circumstance, as well as from the smallness of its eyes, its names are derived. Like all

the rest of the kind, in our climate, they lie torpid during the winter, being sometimes found in vast numbers twisted together.

BLOODHOUND. (*Canis [domesticus] sanguinarius.*) A species of the canine genus, celebrated for its exquisite scent and unwearied perseverance, qualities which were highly esteemed by our ancestors for tracing and recovering such game as had escaped from the hunters in a wounded state, or had been killed and stolen out of the royal forests. These hounds were also formerly much employed in pursuing criminals escaped from justice, or in tracing out robbers or enemies, whose course was inevitably discovered when once the Bloodhound was placed upon their trail. The genuine Bloodhound breed was large, strong,

BLOODHOUND
(CANIS [DOMESTICUS] SANGUINARIUS.)

muscular, broad-chested, the upper lip large and pendulous; the expression stern and noble; the colour a deep tan, and generally marked with a black spot over each eye; this species, however, seems now to be blended with the other smaller hounds, and the original stock is all but extinct.

Sir Walter Scott and other writers narrate many surprising feats of the "sleut-hound," whose unflinching pertinacity generally overcame all impediments, whether engaged in the usual objects of the chase, or directed against political delinquents. "For such purposes as these," says Mr. Bell, "the Bloodhound has been employed, at various times, in every part of the United Kingdom: in the clan feuds of Scotland, in the border contests of the debatable land of the two kingdoms, and in the unhappy Irish rebellion, its extraordinary powers have been taken advantage of without much regard to the claims either of justice or of mercy. Such scenes, however, have now become mere matter of history and of tradition; for, on the one hand, the improvements which have taken place in the breed of hounds for the purposes of the chase, and on the other, the gradual introduction of a more regular system of police, aided, we may hope, by some amelioration in the feelings of the people, have annihilated the use of the Bloodhound in both the objects for which it was formerly employed."

BLUE-BIRD. (*Sialia.*) This bird is as well known in America as the Redbreast is with us, and its habits of familiarity with man in the summer are on a par with those of our friendly visitor in the winter. It is about seven inches and a h and the whole of the upper pa body is of a rich sky-blue shot wi The bill and legs are black; the w

BLUE-BIRD.—(SIALIA SIALI

dusky black at the tips, and the the wings and tail feathers are b throat, neck, breast, and sides partl the wings, reddish chestnut; the vent white. It arrives in the Unit early in the spring, and takes its in November. Its food consists beetles, spiders, and other insect berries, seeds, and fruits. The nes rally built in holes of trees; and t most assiduous in attentions to the eggs are of a pale blue colour; a happens that two or three broods duced in one season.

BLUE [BUTTERFLY]. A nam to several species of Butterflies, of *Polyommatus.*

BLUE-BREAST. (*Cyanecula*) This elegant little bird inhabits parts of Europe, and is mostly fou borders of forests. It is five inc half in length, of which the tail oc and a quarter. The head, back, coverts are ashy-brown, mottle darker tint; a reddish-white li above the eyes; a brilliant sky-bl the throat and half-way down th this is set off by a spot of the mos white, the size of a pea, placed pre the larynx, which, enlarging and ing successively by the movemen part when the bird sings, produces beautiful effect. The blue passes in band, and the latter into a fine or belly is dusky white; the thighs are reddish; and the quill feat brown. Some males have two li spots on the throat, and some ev but some have none. The food of breast consists of flies, the larvæ and worms. The nest is built in h in the holes of trees; and the egg greenish hue. The females, wh are of a celestial-blue tint on the s throat; and when very old they throat sometimes of a very bright

BOA CONSTRICTOR. Of all t that exist, none equal in size and genus *Boa*; some of them being oc met with from thirty to thirty-fi length, and of a strength so prodi be able to destroy deer, oxen, large and powerful animals, by c

them in their ample folds, crushing them to death, and lubricating the bodies with their saliva, swallowing them at their leisure. In this tribe the branches of the upper and lower jaw, throughout the whole length, as well as the palatic bones, are armed with pointed, recurved, solid, and permanent teeth, forming four nearly equal rows above, and two below. They have the tympanic bone or pedicle of the lower jaw moveable, which is itself almost wholly suspended to another bone, analogous to the mastoid, attached

ill by muscles and ligaments, ribute to its mobility. The f this jaw are not united, and upper jaw are attached to the ery loose only by ligaments, so animals can dilate the mouth to swallow bodies much larger selves. They are further distinhaving the scuta on the other tail single; a hook on each side the tail prehensile; the body and largest in the middle, and scales, at least on the posterior head.

as the size and power of such st be, according to the latest and dicated statements of eye-wit- If we may rely on the accounts of ers, there was a time when ser- ere terrible committed their hideous, and kept whole armies in dis- of this kind is described as having r on the banks of the Bagradas, and to have swallowed many of soldiers in the army of Regulus, and others in its folds, and to have ey from the river; till at length, humbled by ordinary weapons, it ed by heavy stones slung from y engines used in sieges: but, to the historian Livy (quoted by Lacépède), the waters were polluted ur, and the air with the steams ronged carcase, to such a degree Romans were obliged to remove n taking with them, however, the fest in length, which was sent to hat some of such frightful dimenindeed the inhabited parts of the are abundant evidence; and there son to believe that as cultivation ations have increased, the larger ferocious animals have been exm the haunts of mankind, and to more distant and uncultivated

ecies of the genus Boa are found in marshes and swamps of Guiana, and other hot parts of the American continent; others are natives of India, Africa, and the larger Indian islands. They are at once pre-eminent from their superior size and their beautiful colours; and though destitute of fangs and venom, nature has endowed them with a degree of muscular power which seems to defy resistance. The ground colour of the whole animal, in the younger specimens, is a yellowish grey, and sometimes even a bright yellow, on which is disposed along the whole length of the back a series of large, chain-like reddish-brown variegations, leaving large open oval spaces of the ground colour at regular intervals: the largest or principal marks composing the chain-like pattern above mentioned are of a squarish form, accompanied by large triangular and other shaped spots, the exterior of the larger ones being generally of a much darker cast, and the ground colour immediately next to them considerably lighter than on other parts, thus constituting a general richness not easily described.

We cannot reflect upon the history of these great reptiles without being struck with their peculiar adaptation to the situations in which they are commonly most abundant. In regions bordering on great rivers, which annually inundate vast tracts of country, these serpents live securely among the trees with which the soil is covered, and are capable of enduring very protracted hunger, without much apparent suffering, or diminution of vigour. Noxious as such districts are to human life, they teem with a gigantic and luxurious vegetation, and are the favourite haunts of numerous animals, preyed upon, and, to a certain degree, restricted in their increase, by the *boæ*. In such situations the Boa Constrictor lurks, or winds itself round the trunk or branches of a tree, until some luckless animal approaches; then, suddenly relinquishing his position, swift as lightning he seizes the victim, and coils his body spirally round its throat and chest, until, after a few ineffectual cries and struggles, the animal is suffocated and expires. The prey is then prepared for being swallowed, which the creature accomplishes by pushing the limbs into the most convenient position, and then covering the surface with a glutinous saliva. The reptile commences the act of deglutition by taking the muzzle of the prey into its mouth, which is capable of vast extension; and, by a succession of wonderful muscular contractions, the rest of the body is gradually drawn in, with a steady and regular motion.

In Mr. M'Leod's narrative of the voyage of H. M. ship *Alceste* to China, is the following characteristic account of the Boa, as observed on shipboard. "Notwithstanding the crowded state of the Cæsar," (the vessel in which the crew of the Alceste returned, their own having been wrecked), "two passengers, of rather a singular nature, were put on board at Batavia for a passage to England: the one, a snake of that species called Boa Constrictor; the other, an Ourang Outang. The former was somewhat small of his kind, being only about sixteen feet long, and of about eighteen inches in circumference; but

his stomach was rather disproportionate to his size, as will presently appear. He was a native of Borneo, and was the property of a gentleman (now in England), who had two of the same sort; but, in their passage up to Batavia, one of them broke loose from his confinement, and very soon cleared the decks, as everybody very civilly made way for him, and ran up the rigging, or to some other place of security. Not being used to a ship, however, or taking, perhaps, the sea for a green field, he sprawled overboard, and was drowned. He is said not to have sunk immediately, but to have reared his head several times, and with it a considerable portion of his body, out of the sea. His companion, lately our shipmate, was brought safely on shore, and lodged in the court-yard of Mr. Davidson's house at Ryswick, where he remained for some months, waiting for an opportunity of being conveyed home in some commodious ship sailing directly for England, in which he was likely to be carefully attended to. This opportunity offered in the Cæsar, and he was accordingly embarked on board of that ship with the rest of her numerous passengers. During his stay at Ryswick he is said to have been usually entertained with a goat for dinner, once in every three or four weeks, with occasionally a duck or a fowl, by way of a dessert. He was brought on board shut up in a wooden crib or cage, the bars of which were sufficiently close to prevent his escape; and it had a sliding door, for the purpose of admitting the articles on which he was to subsist; the dimensions of the crib were about four feet high, and five feet square; a space sufficiently large for him to coil himself round with ease. The live stock for his use during the passage, consisting of six goats of the ordinary size, were sent with him on board, five being considered as a fair allowance for as many months. At an early period of the voyage we had an exhibition of his talent in the way of eating, which was publicly performed on the quarter-deck, upon which he was brought. The sliding door being opened, one of the goats was thrust in, and the door of the cage shut. The poor goat, as if instantly aware of all the horrors of its perilous situation, immediately began to utter the most piercing and distressing cries, butting instinctively, at the same time, with its head towards the serpent, in self-defence. The snake, which at first appeared scarcely to notice the poor animal, soon began to stir a little, and, turning his head in the direction of the goat, he at length fixed a deadly and malignant eye on the trembling victim, whose agony and terror seemed to increase; for, previous to the snake seizing its prey, it shook in every limb, but still continued its unavailing show of attack, by butting at the serpent, which now became sufficiently animated to prepare for the banquet. The first operation was that of darting out his forked tongue, and at the same time rearing a little his head; then suddenly seizing the goat by the fore leg with his mouth, and throwing it down, it was encircled in an instant in his horrid folds. So quick, indeed, and so instantaneous was the act, that it was in

sible for the eye to follow the rapid e
lution of his elongated body. It was
regular *screw-like* turn that was formed
resembling rather a knot, one part o
body overlaying the other, as if to
weight to the muscular pressure, the
effectually to crush his object. During
time he continued to grasp with his
though it appeared an unnecessary pr
tion, that part of the animal which h
first seized. The poor goat, in the
time, continued its feeble and *half-s*
cries for some minutes, but they soon be
more and more faint, and at last it es
The snake, however, retained it for a
siderable time in his grasp, after it wa
parently motionless. He then slowly
cautiously unfolded himself, till the
fell dead from his monstrous embrace.
he began to prepare himself for swallo
it. Placing his mouth in front of the
animal, he commenced by lubricating
his saliva that part of the goat; and
taking its muzzle into his mouth,
had, and indeed always has, the appea
of a raw lacerated wound, he *sucked* i
far as the horns would allow. These
tuberances opposed some little difficult
so much from their extent, as from
points; however, they also, in a very
time, disappeared; that is to say, exter
but their progress was still to be traced
distinctly on the outside, threatening
moment to protrude through the skin.
victim had now descended as far a
shoulders; and it was an astonishing
to observe the extraordinary action o
snake's muscles when stretched to su
unnatural extent — an extent which
have utterly destroyed all muscular
in any animal that was not, like hi
endowed with very peculiar faculties
pansion and action at the same time.
his head and neck had no other appea
than that of a serpent's skin, stuffed a
to bursting, still the workings of the mu
were evident; and his power of suctio
it is erroneously called, unabated; it
in fact, the effect of a contractile mus
power, assisted by two rows of strong h
teeth. With all this he must be so fi
as to be able to suspend, for a time, hi
spiration, for it is impossible to conceiv
the process of breathing could be carri
while the mouth and throat were so
pletely stuffed and expanded by the bo
the goat, and the lungs themselves
mitting the trachea to be ever so hard
pressed, as they must have been, b
passage downwards.

The whole operation of completely go
the goat occupied about two hours
twenty minutes; at the end of which
the tumefaction was confined to the m
part of the body, or stomach, the su
parts, which had been so much disto
having resumed their natural dimen
He now coiled himself up again, an
quietly in his usual torpid state for
three weeks or a month, when, his last
appearing to be completely digested
dissolved, he was presented with an

...h he killed and devoured with ...ity. It would appear that almost ...llows is converted into nutrition, ...l quantity of calcareous matter ...perhaps, not a tenth part of the ...e animal), with occasionally some ...s, seemed to compose his *general* ...nd this may account for these ani... able to remain so long without a ...ood."

...n many other serpents of the spe... of which a short notice is neces... The SPOTTED BOA. (*Boa scytale.*) ...metimes scarcely inferior to the ...ictor, and is of similar habits. It ...colour, marked with large orbi... ...s, interspersed with other marks ...ations. It is found in many parts ...America.—2. The RINGED BOA. ...iris.) This also grows to a large ...h considerably smaller than either ...e mentioned; and may be easily ...nd by the regular distribution of ...and colours. On the back is a ...series of very large blackish cir... ...ead to tail, while along the sides ...ersed several kidney-shaped spots, ...centres white. It inhabits South ...—3. The EMBROIDERED BOA. (*Boa* ... There exists scarcely a more truly ...pecies in the whole serpent tribe ... It is nearly four feet long; the ...lour white, the back being tinged ...t of yellowish brown; while along ...upper part is a continued series of ...legations, bearing a striking resem... embroidery. It is a native of the ...es.—4. CANINE BOA. (*Boa canina.*) ...utiful snake is about four feet in ...the head is large, and shaped like ...dog; the general colour a bright ...een, with transverse white bars down ...the edges of which are of a deeper ...an the ground colour of the body: ...is white. This species belongs to ...merica.—5. The GARDEN BOA. (*Boa* ...n.) The ground colour of this spe... light yellowish brown, or sometimes ...et, variegated with a dark purplish ...attern resembling rich embroidery. ...d is broad, and the neck slender. ...e several others, but the foregoing ...ey a sufficient idea of them.

... The male of Swine. [See HOG.]

...-FISH. (*Capros aper.*) An Acan... ...gious fish, resembling the Dory in ...al outline, and in having the first

...BOAR-FISH.—(CAPROS APER.)

dorsal fin deeply notched; but it has no spines along the dorsal or anal: The fins are covered with rough scales; the mouth projects considerably; and the fins are entirely without filaments. The flesh of the Boar-fish is but in little esteem.

A very few instances of the presence of this rare fish on the British coasts have been recorded. We believe the last was by Waring Kidd, Esq., and the following account of it appeared in "The Zoologist," p. 191:—"On the 6th of March, 1842, a fish six inches and a half in length and three inches in width, of most brilliant colours, was picked up by a fisherman. It was alive when found: the colours were bright orange and lake. The fish was taken by the person who picked it up to Mr. Griffins, the principal fishmonger of Brighton; he took it to the Pavilion, where it was presented to her Majesty. It was immediately recognised by His Royal Highness Prince Albert (the Prince being a good naturalist) as the Boar or Hog fish of the ancients, a species very scarce on the British coasts. His Royal Highness, wishing to have it preserved, sent it here; as it was for Her Majesty, it gave me great pleasure that I succeeded so well, both in preserving the colours and in showing the peculiarity of the mouth, which the fish has the power of extending and contracting at will. When extended, it takes the form of a hog's snout; hence the name of Boar-fish. I suspended the fish under a glass shade, and placed a few seaweeds, &c. on the stand. When quite completed, I made a painting of it, and succeeded in representing the colours pretty correctly."

BOAT-BILL. (*Cancroma.*) A genus of Grallatorial birds, distinguished by their

BOAT-BILL.—(CANCROMA COCHLEARIA.)

very remarkable bill, the form of which by some is likened to a boat with its keel upwards, and by others to the bowls of two spoons, the concave sides of which are placed in contact. The mandibles are very stout and sharp-edged, and the upper one has a projecting point at the extremity. The feet have four toes, all of them long, and without a connecting membrane; for which reason these birds perch on the branches of trees by the sides of rivers, so that they may

pounce upon the fish as they swim beneath. The species *Cancroma cochlearia* is the size of a domestic fowl. In the male, the forehead, and upper parts of the neck and breast, are dirty white; and from the head depends a long crest of black feathers. The female has the top of the head black, without the elongated crest. It inhabits Guiana, Brazil, and other parts of South America. Close to this comes the gigantic African *Balæniceps*, a bird lately described by Mr. Gould, and a bird well able to capture and *crunch* small crocodiles, crabs, and Lepidosirens; more of its history will be shortly known, when adventurous African travellers penetrate further into that continent.

BOAT-FLY. (*Notonecta.*) An aquatic Hemipterous insect, the back of which is shaped like the bottom of a boat; and the hind legs, which are thrice as long as the fore, aptly enough resemble a pair of oars. The legs of the hinder pair have a fringe of bristles along their edge; by which the surface, with which they strike the water in swimming, is greatly increased. Their general form is well adapted for rapid progression in water; and it is from the peculiar aspect and movement of the body that they have received their name. They swim on their backs; and their eyes are so placed that they are able to see both above and below the surface of the water, so that at the approach of danger they instantly descend, and are out of sight.

BOB-O-LINK. [See Rice Bunting.]

BODIAN. There are several species of fish, of the Carp kind, bearing this name. They are natives of the Indian and American seas; and vary from one foot to three feet in length.

BOMBUS. The Humble-bee [which see].

BOMBYCIDÆ. A family of Lepidopterous insects, one of the most interesting of which is the *Bombyx Mori*, well known as the Moth to which the Silkworm turns. The caterpillars of most of the species are hairy, and assume the pupa state in a cocoon spun for its protection.

BOMBYCILLA. The name of a genus of birds placed by Cuvier among the Dentirostral genera of his second order of *Passeres*. They may be distinguished at first sight from any other birds by a remarkable appendage on the tips of some of the quills, which has very much the appearance of red sealing-wax. Their principal generic characters are—Bill short, slightly depressed and triangular at the base; above convex, towards the tip bent down, and emarginate on each side. Nostrils oval, covered with small feathers. Feet four-toed, with the outer one connected at the base. [See Waxwing.]

BOMBYLIDÆ. A family of insects of the order *Diptera*. They have an appearance somewhat resembling that of the smaller kinds of Humble-bees, being thickly covered with erect downy hair: their flight is rapid; and they may be frequently observed to hang, as if suspended, over a flower, sipping its sweets by means of their long proboscis, while their wings vibrate so rapidly as to be scarcely discerned to move; then darting to another with such rapidity that the eye cannot follow them. They frequent gardens, open parts of woods, and sunny banks; and are most common in spring.

BOMBYX. [See Silk-worm.]

BONASSUS. [See Bison.]

BONITO. (*Thynnus.*) A handsome fish of the order *Acanthopterygii*, a native of the Mediterranean, and a rare visitant of our

BONITO.—(THYNNUS PELAMIS.)

shores. It is about three feet long; has a sharp head, a small mouth, large gills, full silvery eyes, and a crescent-shaped tail. It has no scales except on the middle of the sides, where a line of gold colour runs from the head to the tail. It is greenish on the back and sides, but its belly is of a silvery white; and it is distinguished by its great activity and voracity, being one of the chief enemies of the flying-fish. It is also called the Striped Tunny.

BOOBY. (*Sula fusca.*) The name given by navigators to a large bird, a species of Gannet, which inhabits the desolate islands

BOOBY.—(SULA FUSCA.)

and coasts of most warm climates. The name was naturally acquired from their apparent stupidity, in quietly sitting on the shore, or perching on the yard of a ship, till knocked on the head, or taken away by any one who may attempt it. [See Gannet.]

BOOK-WORM. A name given to various species of insects in the larva state, in which they destroy books and papers, by boring into them; such as the *Pinicke*, *Anobium*, &c.

...S. A genus of small Acanthopterygiens, found mostly in the Mediterra... The species are generally of brilliant ...g, and characterised by a small ... large eyes, and a rounded form.

...YRUS. A parasitic Crustacean, of ...er *Isopoda*, of which three or four ... are known. They fasten on the ... hermit crab, and other Crustacea. ...ers differ very much in appearance. ... *Squilicrus* is far from uncommon in ...ntry; it causes swellings on the side ... carapace of the common *Palæmon* ...

... The scientific name for a genus ...ow-horned ruminating quadrupeds, ...n their domesticated state contribute ...aterially to the comforts and con...ns of man. [See OX; BISON, &c.]

...TRICHUS; BOSTRICHIDÆ. A ...and family of Coleopterous insects, of ...oup *Xylophila*, some species of which ...hly destructive of timber. These Bee...ally live in wood, which their larvæ

...LOPHILUS FLAGELLIFORMIS — AN ANTENNA MAGNIFIED.

... in every direction; and when abun...n forests, especially those of pines and ...ey destroy immense numbers of trees ...w years. One of the most destructive ... is the *Bostrichus Typographicus*, or ...ypographer Beetle, which has at differ...nes ravaged the forests of Germany. ...ours, both in the larva and perfect states, the soft wood beneath the bark, which is most essential to the vegetative process, and thus causes the death of the tree. The females attack the crevices of the bark, and perforate it in diverging lateral channels, in which from sixty to eighty eggs are deposit...

...OGRAPHER ...BEETLE.

...t the end of fifteen days the larvæ are ...d, and forthwith commence the work ...truction, each gnawing a serpentine ...y between the bark and the wood, and ...ally enlarging its burrow until the ... when it is ready to pass into the pupa ... when, having finally become a perfect ..., it directly bores through the portion ... tree which remains between the wood ...e outer bark, and escapes through a ...circular aperture in the latter. There ...s to be no remedy when the trees are once attacked but to cut down the trees, bark them and burn the bark, and to remove all felled timber without delay.

BOTATRISSO. The Eel-pout. [See EEL.]

BOTAURUS. [See BITTERN.]

BOTRYLLUS. A genus of Molluscous animals termed *Aggregated Ascidians*, which at first float free and separate, but at a certain period of their existence unite to form one common mass. The aggregated animals thus found together are almost always very small, soft, irritable, and contractile, changing their form with the slightest movement. [See ASCIDIA.]

BOTS. The larvæ or caterpillars of the Gad-fly, belonging to the order *Diptera*, genus *Œstrus*, of which there are numerous species. They infest horses and cattle; and are distinguished by passing the larval state of their existence within some animal, and feeding on the juices or substance of that animal. [See ŒSTRUS; BREEZE-FLY, &c.]

BOTTLE-FISH. [See SACCOPHARYNX.]

BRACHELYTRA. An extensive group of Coleopterous insects, distinguished by the elongate form of the body and the shortness of the wing-cases. They run and fly with equal agility; preying upon decaying animal and vegetable matters, especially fungi, agarics, &c., in which they chiefly reside; they are also found in profusion under heaps of putrescent plants. They are decidedly carnivorous; some species are, however, found in flowers, others upon the margins of running streams, and others under the bark of decaying trees.—One of the commonest, and at the same time most formidable looking members of the family, is a black species, rather more than an inch long, commonly called the "Devil's Coach-horse" (*Goerius olens*). This is frequently to be seen running about garden walks, cellars, and dusty roads. True to the habits of the family, on the least approach of danger it immediately puts itself into a posture of defence, throws the tail over the head like a scorpion, protrudes the anal rings, elevates its head, and opens its long and powerful jaws.—The geographical range of this group of insects is principally confined to the temperate climes of the northern hemisphere; a few species, however, have been received from tropical climates, which are remarkable for the singularity of their forms and the splendour of their colours; but it rarely happens that the exotic species exceed those of our own country in size.

BRACHINUS. A genus of Coleopterous insects, with truncated elytra and a smallish thorax; of which the *Brachinus crepitans* is the most common. This insect, which is found under stones, is about half an inch long; the head, thorax, and legs are of a yellowish red colour; the wing-cases greenish, or blue black; and the antennæ reddish. They possess a remarkable power of violently expelling from the anus a pungent acrid fluid, accompanied by a loud report, considering the size of the insect; whence its common name of *Bombardier Beetle*.

about two months the case of the chrysalis opens, and the fly makes its appearance. Sheep are exceedingly annoyed by these flies, and to avoid them lie down in ruts with their heads close to the ground; at other times we see them huddled together under trees in a dense mass or phalanx, the nose of each being pushed into the fleece of another.

"There is a *third* species of Breeze-fly, far more formidable than either of those previously described: its eggs are laid on the backs and sides of cows and oxen, and the larvæ hatched from them enter the hide, producing tumours as large as pigeons' eggs. The larva itself is of an oblong figure, larger at one extremity than at the other; the body is divided into ten or twelve segments by transverse bands, and these are again intersected by six longitudinal lines, which purse up the skin, and produce along the sides a series of mammiform protuberances, each possessing at its extremity a respiratory pore: on each segment of the body may be observed ridges, or dotted prominent lines, interrupted however by the longitudinal lines already noticed: there are in pairs a narrower and broader line of minute dots or points; the narrower line is found, under a lens, to be formed of hooks bent towards the posterior extremity of the insect; the broader lines consist of smaller hooks bent in an opposite direction, or towards its head: it is probably by the aid of these hooks that the animal raises or depresses itself in the tumour, and finally, when mature, effects its escape.

"The food of the larva appears to be the pus or matter surrounding it in the tumour in which it exists: as regards the period of its continuing to feed we have little satisfactory information. Its colour when young is white, but as it advances towards maturity it becomes browner, and finally of a deep dark brown, approaching to black: having attained its full size, it presses itself against the upper part of the tumour, and by some unknown process makes an aperture in the hide of about sufficient size to admit a pea; through this the larva wriggles itself a segment at a time until it comes quite out, and falling to the ground seeks a convenient retreat in which to become a chrysalis.

"The chrysalis is of a dark brown colour, and in figure somewhat resembles the half of a walnut-shell, being narrower at one end than the other, flat on one side, and very rounded and convex on the other; after lying on the ground for some weeks, a portion of the indurated skin or cover, of a triangular shape, is forced up at the smaller end, and through the aperture thus occasioned the fly emerges. The *fly* is large and handsomely coloured; although the presence of the larvæ in the backs of cattle is frequently observable, the insect in its perfect state is rarely met with, and very few of our cabinets possess good specimens: it flies with rapidity, but apparently without noise, and never ventures over water.

"The act of oviposition appears to be attended with severe suffering, or apprehension at least, which makes the cattle run wild and furious, and gad or stray from pastures, and hence the ancient epith gad-fly. When oxen are yoked to the pl the attack of this fly is attended with danger, since they become perfectly u trollable, and often run directly for through the hedges, or whatever obs their way. On this account many pl are provided with a contrivance for s the oxen immediately at liberty. W the cattle are attacked by this fly, it is known by the extreme terror and agit of the whole herd; the unfortunate of the attack runs bellowing from a them, and seeks a refuge in the w water; the tail becomes rigid, and is dished aloft, or held straight out fro body. Its frightened companions foll the rear of the animal attacked, and a and apparently unmeaning chase takes which, from the inelegant gallop of the has often a very ludicrous effect.

BRENT GOOSE. A much smaller than the common wild goose, but with l wings; and it traverses greater distan its migrations. Its breeding places a the far north; but it migrates for the w to France, England, Ireland, &c. The neck, bill, and upper part of the head black; and on each side of the throa part of the neck: the lower part o breast, the scapulars, and coverts of the are ash-coloured; the feathers, both and below the tail, are white; and the the quill feathers, and the legs are blac

BRENTHIDÆ, or BRENTIDÆ. A mily of Coleopterous insects, which among the most remarkable of the b tribe, and almost entirely confined to t cal climates. Distinguishing character body much elongated; tarsi with the pe timate joints bilobed; antennæ fili or in some with the terminal joint fo into a club; proboscis projecting hori tally; palpi minute. They are found e ing on trees, or under the bark, and s times on flowers. Their general colo black or brown, with red spots or marki

Dr. Thaddeus Harris, librarian of Har College, gives a detailed account of a N American species, in his fine work on Insects of Massachusetts. We somew condense his history of it. It is the *T thus septentrionalis*. The Northern B thus, so named because most of the s species are tropical insects, is of a ma any brown colour; the wing cases somewhat darker, ornamented with ma tawny yellow spots, and marked with furrows, the sides of which are punct Its common length is about six-tenths o inch, but much larger as well as smaller cimens frequently occur. The Nort Brenthus inhabits the white oak, on trunks and under the bark of which it be found in June and July, having completed its transformations. The fem when about to lay her eggs, punctures bark with her slender snout, and depo egg in each hole thus made. The gru soon as it is hatched, bores into the wood, forming a cylindrical passage, w

ar by pushing its castings out of
of the hole, as fast as they accu-
These castings or chips are like
ux-dust; and the holes made by
are easily discovered by the dust
m. The grub is about an inch
arly cylindrical; the last segment
ly consistence, and is obliquely
the end, so as to form a kind of
oop, the edges of which are fur-
little notches or teeth. It is by
is singular scoop that the grub
minute grains of wood out of its
he pupa, which is of a yellowish
s, is met with in the borrow
the larva; the back is furnished
ne rows of little thorns or sharp
hose are two larger thorns at the
the body. These minute thorns
ntin the pupa to move towards
f its borrow when it is about to
ed, and may serve also to keep
ly during its exertions in cast-
pa-skin. These insects are most
trees that have been cut down
fuel, which are generally at-
ent summer after they are felled;
en ascertained that living trees
s escape, but those that are in
re rarely perforated by grubs of

NNES. The term given to the
of Stilt-birds, the shortness of
are inadequate to perform the
ght; the weight of their mas-
pearing to require more mus-
s support them in the air than
rnished them with. The pec-
are reduced to extreme tenuity;
les of the thighs and legs are
ous thickness. [See OSTRICH,
ks.]

PEARL. (*Pleuronectes rhom-*
rmoral form this fish resembles
ut is inferior to it both in size
It is distinguished from the
perfect smoothness of its skin,
nd with scales of a moderate
its pale brown colour above,
scattered yellowish or rufous
toral line, as in the Turbot, is
ver the pectoral fins, and from
straight to the tail. The Brill
many parts of our coasts; the
t of the supply for the London
derived from the southern
it is most abundant.

NE [BUTTERFLY]. A name
llectors to the Butterfly called
Chemosi.

A local name given to the
ns alludes to a "stinking brock."
es a hart in its third year.

S; BRUCHIDÆ. A genus and
leopterous insects, allied to the
nd thus characterized: palpi
form, not very minute; rostrum
ion exserted; antennæ eleven-
-clavate, with the club formed
oints in some; filiform, or gra-
dually thicker towards their points, in others
serrated or pectinated; the anus naked;
hind feet generally very large. The female
deposits an egg in the young and tender germ
of various leguminous or cereal plants, &c.,
upon which the larva feeds, and within

BRUCHUS SERRATUS.

which it undergoes its transformations; the
perfect insect, in order to make its escape,
detaches a portion of the epidermis like a
small cup; hence the small holes often ob-
served in peas, dates, &c. The family is very
extensive. *Bruchus pisi*, Linn., which is two
lines long, black, with grey spots on the
elytra, in some years does great mischief to
peas, particularly in North America. *Bru-
chus serripes*, the figure of which is here
given, with the head and posterior limb, is a
fine example of this family. By some authors
it is placed in a separate genus.

BRUSH TURKEY. The local name
given by the colonists to the New Holland
Vulture (of Latham,) or Tallegalla (of
Gould). [See TALLEGALLA.]

BUBO. A subgenus of owls. [See OWL.]

BUCCINUM. A genus of Molluscous ani-
mals called Whelks; the general characters
of which are, that their mouths are an oblong
or very lengthened oval, the upper parts of
which are slightly beaked. In the Linnæan
system, the Buccina form a distinct genus
of the univalve and spiral Testacea. Those
species most usually met with on the coasts
of the British isles are the brown, massy,
waved, striated, reticulated, and small Buc-
cina. The shell of the *Buccinum lapillus*
(the common White Buccinum) is one of the
shells from which the ancients are supposed
to have extracted their indelible purple dye,
called the Tyrian purple. The part con-
taining the colouring matter is a longitu-
dinal vein, just under the skin on the back,
behind the head. If the vein be laid open
with a needle, a tenacious yellow matter will
flow, which being applied with a hair pen-
cil to linen, silk, or paper, it will in a short
time become of a bright yellow, will soon
change to pale green, then assume a bluish
cast, and afterwards a deep and brilliant
purple.

We learn from Mr. Stevenson's interesting
narrative of the erection of the Bell Rock
light-house, that the *Buccinum lapillus* preys
upon the Mussel (*Mytilus edulis*.) Mr. S.
says, "When the workmen first landed upon
the Bell Rock, limpets of a very large size

were common, but were soon picked up for bait. As the limpets disappeared, we endeavoured to plant a colony of mussels, from beds at the mouth of the river Eden, of a larger kind than those which seem to be natural to the rock. These larger mussels were likely to have been useful to the workmen, and might have been especially so to the light-keepers, the future inhabitants of the rock, to whom that delicate fish would have afforded a fresh meal, as well as a better bait than the limpet; but the mussels were soon observed to open and die in great numbers. For some time this was ascribed to the effects of the violent surge of the sea, but the *Buccinum lapillus* (Purpura) having greatly increased, it was ascertained that it had proved a successful enemy to the mussel. The *Buccinum*, being furnished with a proboscis capable of boring, was observed to perforate a small hole in the shell, and thus to suck out the finer parts of the body of the mussel; the valves of course opened, and the remainder of the fish was washed away by the sea. The perforated hole is generally upon the thinnest part of the shell and is perfectly circular, of a *champhered* form, being wider towards the outward side, and so perfectly smooth and regular as to have all the appearance of the most beautiful work of an expert artist. It became a matter extremely desirable to preserve the mussel, and it seemed practicable to extirpate the *buccinum*. But after we had picked up and destroyed many barrels of them, their extirpation was at length given up as a hopeless task. The mussels were thus abandoned as their prey, and in the course of the third year's operations, so successful had the ravages of the *buccinum* been, that not a single mussel of a large size was to be found upon the rock; and even the small kind which bred there, are now chiefly confined to the extreme points of the rock, where it would seem their enemy cannot so easily follow them."

BUCCO. A genus of birds, called *Barbets*, a name derived from the bristly feathers which surround the base of the bill, and project beneath the chin like a beard. [See BARBET.]

BUCEROS. [See HORNBILL.]

BUCK. The male of the Fallow Deer, the female of which is called a *Doe*. [See DEER.]

BUFFALO. (*Bos bubalus.*) A species of Ox, found in various parts of India; but in America the name of "Buffalo" is universally given to the Bison (which see). The Buffaloes are of large size, but low in proportion to their bulk; they have no hunch on the back, and only a small dewlap on the breast; the hide is generally black; the tail long and slender. They generally live in small flocks, but sometimes are found in herds of considerable numbers; frequenting moist and marshy situations, and preferring the coarse vegetation of the forest and swampy regions to that of open plains. They swim well, and cross the broadest rivers without hesitation; their gait is heavy, and they run almost always with the nose horizontal, being principally guid sense of smelling. They are ferox

BUFFALO.—(BOS BUBALUS)

born, and with difficulty subjug Arnee Buffalo (*Bos arnee*) has b prodigious size and length; the turned laterally, flattened in wrinkled on the concave surface. them are in the British Museu which measures along the curve to tip, six feet three inches, an inches in circumference at the ba

This formidable animal is fou many parts of India, and also tam the inhabitants have occasion for Being extremely strong, they are in agriculture, and in drawing s burdens, being guided by rings thr their noses. All Buffaloes are fearful of fire; and they have a g sion to red colours. In general, th inoffensive, if left undisturbed; wounded, or even fired at, their fu ungovernable; they then tear up with their fore-feet, make a horr ing, and pursue the objects of th ment with determined fury. [See

BUFO. [See TOAD.]

BUG. (*Cimex.*) Of the numero Hemipterous insects belonging to *Cimex*, we may specify the troubl nauseous insect, the *Cimex lect* common domestic Bug. To give a ticular description of this noxious would be superfluous: it may be to observe, that it is of an oval sh the sixth of an inch long, of a com

BUG.—(CIMEX LECTULARIUS)

flat form, and of a reddish-brow It is asserted, though it may be d say how truly, that the Bug wa known in England before the having been imported from Americ the timber used in rebuilding t London after the great fire of 16 appears not to have been an uncom

countries of Europe before that
itself-sucking properties, and the
smell it emits when touched, are
known to regular comment. The
deposits her eggs in the beginning
; they are very small, white, and of
; each is fixed to a small hair-
which is glutinous, and readily
any thing it touches. The places
the eggs are generally deposited
of bedsteads or other furni-
walls of a room. During the
these odious insects secrete
behind walls, old wainscoting, or
places, where they are capa-
the most intense frost without
on the return of warm weather
from their concealment. A
avoids the light, if possible; and
of every chink and cranny
secure lodgment; its motion is
unwieldy; but its sight is so ex-
although it persecutes its victim
assiduity in the dark, the
perceives the light, it generally
its retreat. — The Rev. Leonard
described two or three other spe-
in this country. [See CIMEX.]

MUS. The name of a very exten-
of terrestrial molluscs, very much
the *Helix*. Some attain to great
[HELIX.]

-DOG. (*Canis* [*domesticus*] molos-
variety of the Dog, remarkable for its
mouth, and the projection of
jaw. The head is massive and
the frontal sinuses large; the lips
and pendulous; the ears pendant
; the neck robust and short;
short and thick. Though inof-
harmless when properly domesti-
Bull-dog presents to the eye a
appearance: the doubtful and
lore, the tiger-like shortness of the
under-hung jaw, the width of the
distension of the nostrils, and the
sight of the teeth, hold forth
proof of the power he can
that power is angrily brought
The breed is by no means so
as formerly, in consequence of the
of the barbarous sport of bull-bait-
butchers, however, use Bull-dogs
and throwing down cattle; and
to see the apparent ease with
dog will seize an ox by the nose,
him perfectly still, or throw him on
at his master's command. They be-
vicious, and sometimes extremely
as they advance in years, inflict-
bites for the slightest provoca-
their unrestrained state, indeed, they
nuisance, and therefore ought
be allowed their full liberty. [See

A. A genus of Molluscous animals
shells; whose general charac-
that the shell is sub-oval, that the
is oblong and smooth, and that one
a little convoluted. The animal
by gills, but has no respiratory tube,

and consequently the margin of the aperture of the shell is entire, or without a fissure or canal. There are numerous species, widely diffused; generally about the size of a bean, tho' sometimes much larger. Most of this genus, especially of the larger sizes, are furnished with an organ exactly resembling the gizzard of a fowl, and which they appear to use for the purpose of masticating their food.

BULLFINCH. (*Loxia pyrrhula* of Linnæus.) A well-known and pretty bird, about the size of a sparrow. Its wild note is a soft low twitter; but, when tamed, it becomes remarkably docile, and learns with great facility to whistle musical airs, which, if properly taught, it seldom wholly forgets. The bill is strong, short, black, and thick; the upper part of the head, the ring round the bill, and the origin of the neck, fine glossy black; the back ash grey; breast and belly red; wings and tail black; the upper tail coverts and vent are white; legs dark brown. The female is very like the male, but the colours are less bright, and the under parts of a reddish brown. These birds are common in every part of our island, as well as in most parts of Europe; their usual haunts during summer are woods and thickets; they also frequent our orchards and gardens in the spring, seeking not only the insects which are lodged in the tender buds of fruit-trees, but feeding on the buds; on which account they are regarded by gardeners as among the most pernicious of the feathered race.

BULLFINCH.—(PYRRHULA PYRRHULA.)

The Bullfinch is a native of England, and also of most parts of the European continent. It generally constructs its nest, which is composed of small dry twigs, in the thickest parts of a white or black thorn hedge. The female lays about four or five bluish-white eggs, marked with dark spots at the larger end; and breeds about the latter end of May. The bird is very common in the mountainous parts of Germany; from which

country the market for piping-bullfinches is principally supplied. Other species are met with in Asia, Africa, and America; but they hardly require a distinct notice here. By many naturalists they are made to constitute a separate genus, called *Pyrrhula*, after the type which we have just described.

BULL-FROG. [See FROG.]

BULL-HEAD, or MILLER'S-THUMB. (*Cottus gobio.*) There are several species of fish, inhabiting different climates, which are denominated Bullheads; but it is the well-known *River Bullhead*, or *Miller's Thumb*, an Acanthopterygious fish, which we are now about to describe. This species is found in clear brooks and rivers, in most parts of

RIVER BULLHEAD.—(COTTUS GOBIO.)

Europe. It is only four or five inches long; the head is of a roundish shape, large, broad, and depressed; the gill-fins are round, and beautifully notched at their circumference; and the rays of all the fins are prettily spotted. The mouth is large, and full of small teeth; the general colour of the body is a dark brownish black; the sides lighter, with small black spots; and the under surface of the head and belly white. It is so remarkably stupid, that whatever number may be together, the most inexpert angler may catch them all. It is generally found among loose stones, under which, from the peculiarly flattened form of its head, it is enabled to thrust itself, and thus to find a hiding place. Mr. Yarrell, in his truly national work "The British Fishes," (the wood-cut illustrations of which are such models of excellency,) so amusingly accounts for the popular names of this fish, that we take the liberty of borrowing his words:—"As the term Bullhead is considered to refer to the large size of the head, so the name of Miller's Thumb given to this species, it has been said, is suggested by, and intended to have reference to, the particular form of the same part. The head of the fish, it will be observed, is smooth, broad, and rounded, and is said to resemble exactly the form of the thumb of a miller, as produced by a peculiar and constant action of the muscles in the exercise of a particular and most important part of his occupation. It is well known that all the science and tact of a miller is directed so as to regulate the machinery of his mill, that the meal produced shall be of the most valuable description that the operation of grinding will permit when performed under the most advantageous circumstances. His pro loss, even his fortune or his ruin, upon the exact adjustment of all th parts of the machinery in operatio miller's ear is constantly directed to made by the running-stone in its course over the bed-stone, the exac lelism of their two surfaces, indicat particular sound, being a matter of consequence: and his hand is as co placed under the meal-spout, to by actual contact the character and of the meal produced. The thum particular movement spreads the over the fingers; the thumb is the the value of the produce, and hi arisen the sayings of "Worth a thumb;" and "An honest miller golden thumb;" in reference to the of the profit that is the reward of By this incessant action of the thumb, a peculiarity in its form is p which is said to resemble exactly th of the head of the fish constantly the mill-stream, and has obtained t name of the Miller's Thumb, whic in the comedy of "Wit at several W by Beaumont and Fletcher, act v. s and also in Merrett's "Pinax." the improved machinery of the pres has diminished the necessity for the skill in the mechanical departm thumb is still constantly resorted t best test for the quality of the flour.

The ARMED BULLHEAD, or (*Cottus aspidophorus,*) is found in th and Northern seas, and is also take British coasts. It seldom exceeds si in length; small crustaceous anim aquatic insects are its food; and its said to be firm and good. The head bony, and very rugged; the end of is armed with four short upright spi the chin is furnished with several cirri. The mouth is small, as are t which are very numerous. The bo vided longitudinally by eight smal and is defended by eight rows of str plates, of which the elevated ridges central lines. The pectoral fins a with a broad bar of brown across th the general colour of the upper s the body brown, with four broad dar bands; tail brown; and the under the body nearly white.

The SIX-HORNED BULLHEAD *hexacornis*) is a North American about seven inches long. The head and depressed, and on it are six nail processes standing erect; the eyes ar the mouth is capacious, its margins by the intermaxillaries and lower ja jaws and the vomer are set with t fine teeth; the gill-covers are comp several bones connected by membra armed on their exterior edges with five small spinous teeth: the bone support the pectoral fins are also with small spines, and have shar edges. The body is much narrow the head, and tapers to the insertio caudal fin. The upper aspect of t

a clouded admixture of brown and
en tints; the belly white; and the
ked with bluish-black. This species
be extremely tenacious of life; for,
ing drawn from the water, they will
ously over the sands, and inflate
d when touched. In this operation
chinomyous membrane is distended,
several pieces composing the gill-
re separated by the extension of the
ing membranes. Capt. Sir J. C. Ross,
ntiers it to be the same with the
owpaisides of Fabricius, says that,
h very abundant on the Greenland
is more rare in the higher latitudes,
al were taken on both sides of the
a of Boothia. The natives prize it
e an article of food, preferring it to
or salmon.

TING. (*Emberiza.*) The Buntings
very interesting group of Passerine
The general characters of the family
t the bill is strong and conic, the
andible with a strong knob on the
," the sides of each mandible bending
they live principally on seeds, for
aking of which their bill is well
. We select a few from among the
n species as examples.

COMMON BUNTING. (*Emberiza*
.) The length of this bird is about
ches and a half; beak brown; head
per parts light brown, inclining to
nder parts yellowish white; quills
with lighter edges; upper coverts
with white; tail slightly forked and
and legs pale brown. These birds

Y BUNTING.—(EMBERIZA MILIARIA.)

mon in England, delighting in those
st abound in corn, and rarely found
ultivated places; in winter they as-
in vast flocks; and are often taken
and brought to market, where they
for larks, but may be easily dis-
ed by the knob in the roof of the
The female builds her nest on a tuft
plants, a few inches from the ground:
posed externally of grass and a few
rs. She lays five or six dirty-white
ted with reddish brown and ash

The BLACK-HEADED, or REED-BUNTING. (*Emberiza schœniclus.*) Birds of this species frequent fens and marshy places, where there is abundance of rushes, among which they nestle. The head, throat, fore part of the neck, and breast, are black; divided by a white line from each corner of the bill, passing downwards and nearly encircling the neck; upper parts of the body and wings reddish brown, each feather with a black streak down the middle; under parts

REED BUNTING.
(EMBERIZA SCHŒNICLUS.)

white, with brownish streaks on the sides; quills dusky, edged with brown; two middle tail-feathers black, the outer ones almost white; legs and feet dusky brown. The head of the female is rust-coloured, spotted with black: it is destitute of the white ring round the neck, but in other respects it resembles the male. This bird was formerly supposed to suspend its nest between four reeds within a few feet of the water; this, however, is not the case, as it generally places it on the ground at a little distance from the water, and occasionally in a bush, in high grass, or in furze, at a great distance from any water: it is composed of stalks of grass, moss, and fibres, lined with fine grass. The eggs are four or five in number, of a dirty bluish white, with many dark-coloured spots and veins.

To the Bunting Family, but by naturalists placed in different genera from the preceding, belong the three following species:—

The SNOW BUNTING. (*Plectrophanes nivalis.*) This hardy bird is an inhabitant of the mountains of Spitzbergen, Greenland, Lapland, Hudson's Bay, and other cold northern countries; in the Highlands of Scotland (where it is known by the name of the Snow-flake) it is said also to be extremely abundant, and is supposed to be the harbinger of severe weather; which drives it from its usual haunts. The Snow Bunting weighs only about an ounce and a half. The bill and legs are black; the forehead and crown are white, with some mixture of black on the hind part of the head; the back is wholly black; the rump is white; the quill-feathers are black, with white bases; and the secondaries are white, with black spots on their interior webs. The inner feathers of the

tail are black, the three exterior ones being white, with dusky spots near their ends; and from the chin to the tail is of a delicate white. The claw of the hind toe is very long.

SNOW-BUNTING.
(PLECTROPHANES NIVALIS.)

The nest of this bird is said to be placed in the fissures of the mountain rocks, and to be composed of grass, with a layer of feathers inside, and another of the soft fur of the Arctic Fox within that. The female lays five reddish-white eggs, spotted with brown: on its first arrival in this country it is very lean, but quickly grows fat, and is then excellent eating. It sings very sweetly, sitting on the ground; and does not perch, but runs about like the lark, which at first sight it much resembles.

PAINTED BUNTING. (*Emberiza? ciris.*) A beautiful bird, of the size of a hedge-sparrow, which inhabits various parts of South America: it builds its nest in the orange trees, and will feed on millet, succory, and other seeds. It has a very soft and delicate note; and will live in confinement eight or ten years. The head and neck are of a violet colour; upper part of the back and scapulars yellow-green; lower part and all the under side red; wing coverts and tail of an olive-green, tinged with brown, and edged with red. They seldom obtain their full plumage till the third year, so that they are rarely found quite alike.

The ORANGE-SHOULDERED BUNTING. (*Vidua longicauda.*) This bird, which inhabits the Cape of Good Hope, is the size of a song-thrush; bill strong and dusky, the nostrils almost hid in the feathers; plumage above and below glossy black; lesser wing-coverts crimson, below which is a white spot. The tail consists of twelve feathers, hanging sideways; the two middle ones fifteen inches in length, the rest shortening by degrees, and the outer ones very short; the legs large and brown; claws long and hooked. Of this species M. Vaillant relates some particulars not unworthy of notice in this place. "The female of this beautiful bird," says he, "has the simple colours of the sky-lark, and a short horizontal tail, like that of almost all other birds; the male, on the contrary, is wholly black, except at the shoulder of the wing, where there is a large red patch, and his tail is long, ample, and vertical, like that of the cocks. But this brilliant plumage and fine tail subsist only during the season which continues six months. This over, he lays aside his splendid habi and assumes the more modest dres mate. The most extraordinary circu is, that the vertical tail also chan horizontal one, and the male so exa sembles the female, that it is not to distinguish them from each othe female has her turn. When she re certain age, and has lost the faculty pagating the species, she clothes he the remainder of her days in the gar the male had temporarily assumed; like his at that period, grows long, his also, from horizontal becomes The birds of this species associate live in a sort of republic, and bui nests near to each other. The society consists of fourscore females, whether, by a particular law of natu females are produced than males, or other reason of which I am ignora are never more than twelve or fifte to this number of females, who have common." The truth is, that the m cept at the breeding season, when t tailed feathers are produced, very m sembles the female, and may often taken for it by an inattentive observ

According to our author, this tra tion is by no means confined to this species of Bunting. Many females feathered creation, when they grow as to cease laying eggs, assume th splendid colours of the male, which tain during the remainder of their li

BUPALUS. A genus of Lepid insects, of which there are many The *Bupalus piniarius*, called the P White Moth, may be taken as an e Its wings on the upper side are of brown colour, and adorned with n pale yellow spots. The Caterpillar with a white stripe down the middl back, and two stripes on each side o

BUPHAGA. There is but one bir constitutes this genus of Passerine tres, and that is the AFRICAN OX (*Buphaga Africana*). It is said to quently found in Senegal, and that food consists in the larvæ of *œstri*, or which it sedulously extracts from t of cattle: hence its name. It measu eight inches and a half in length; i brown above, and of a dull yellowis beneath. The bill is nearly an inc yellowish, with a red tip; the legs a are brown. It is extremely wild and is usually seen in small flocks eight together.

BUPRESTIS: BUPRESTIDÆ. nus and family of Coleopterous in the family *Serricornes*, distinguishe toothed or serrated form of the a and the splendour of its colours; its species having spots of golden h an emerald ground, whilst in othe glitters upon the gold. The subjoin

shown one of the curious Brazilian species; it is named *B. penicillata* from the penetis of hairs at the tips on the sides of its elytra. The largest and most brilliant of these beetles

BUPRESTIS PENICILLATA.

are found chiefly in tropical climates. Some of them live for very many years in the larva state. A gentleman in the city of London had a cask that had been brought from India, in which was one of the grubs belonging to this species; several years afterwards the perfect insect made its appearance, and thereby put an end to many surmises of the merchant and his clerks as to certain scratchings which they had long heard in silent wonder.

The Buprestians are hard-shelled beetles, often brilliantly coloured, of an elliptical or oblong-oval form, obtuse before, tapering behind, and broader than thick, so that when cut in two transversely, the section is oval; the legs are rather short, and the feet are formed for standing firmly, rather than for rapid motion; the soles being composed of four rather wide joints, covered with little spongy cushions beneath, and terminated by a little joint, which is armed with two claws. In the greater number of coleopterous insects the scutel is quite conspicuous, but in the Buprestians it is generally very small, and sometimes hardly perceptible. These beetles are frequently seen on the trunks and limbs of trees basking in the sun. They walk slowly, and, at the approach of danger, fold up their legs and antennæ and fall to the ground. Being furnished with ample wings, their flight is swift and attended with a whizzing noise. They keep concealed in the night, and are in motion only during the day.

The larvæ are wood-eaters or borers; and both fruit and forest trees are very subject to their attacks. In the tropical parts of S. America the grub of the *Buprestis gigas*, the perfect insect of which is figured in next column, must be exceedingly destructive. They are in general of a yellowish white colour, very long, narrow, and depressed in form, but abruptly widened near the anterior extremity: the upper jaws are provided with three teeth, and are of a black colour; and the antennæ are very short. There are no legs, nor any organs which can serve as such, except two small warts on the under side of the second segment from the thorax. The motion of the grub appears to be effected by the alternate contractions and elongations of the segments, aided, perhaps, by the tubercular extremity of the body, and by its jaws, with which it takes hold of the sides of its burrow, and thus draws itself along. These grubs are found under the bark and in the solid wood of trees, and sometimes in great numbers. They frequently rest with the body bent sideways, so that the head and tail approach each other; those found under bark usually assuming this posture. The pupa bears a near resemblance to the perfect insect, but is entirely white, until near the time of its last transformation. Its situation is immediately under the bark, the head being directed outwards, so that when the pupa-coat is cast off, the beetle has merely a thin covering of bark to perforate before making its escape from the tree. The form of this perforation is oval, as is also a transverse section of the burrow, that shape being best adapted to the form, motion, and egress of the insect.

BUPRESTIS GIGAS.

Some of these beetles are known to eat leaves and flowers, and of this nature is probably the food of all of them. The injury they may thus commit is not very apparent, and cannot bear any comparison with the extensive ravages of their larvæ. The solid trunks and limbs of sound and vigorous trees are often bored through in various directions by these insects, which, during a long-continued life, derive their only nourishment from the woody fragments they devour. Pines and firs seem particularly subject to their attacks; but other forest-trees do not escape, and even fruit trees are frequently injured by them. We may here remark, that woodpeckers are much more successful in discovering the retreats of those borers, and in dragging out the defenceless culprits from their burrows, than the most skilful gardener or nurseryman.

The wild cherry-tree (*Prunus serotina*), and also the garden cherry and peach trees, suffer severely from the attacks of borers, which are transformed to the beetles called *Buprestis divaricata*, because the wing-covers divaricate or spread apart a little at the tips. These beetles are copper-coloured, sometimes brassy above, and thickly covered with little punctures; the thorax is slightly furrowed in the middle; the wing-covers are marked with numerous fine irregular impressed lines and small oblong square elevated black spots; they taper very much behind, and the long and narrow tips are blunt-pointed: the middle of the breast is

furrowed; and the males have a little tooth on the under-side of the shanks of the intermediate legs. They measure from seven to nine tenths of an inch. These beetles may be found sunning themselves upon the limbs of cherry and peach trees during the months of June, July, and August.

Buprestis dentipes, so named from the denticulation on the under-side of the thick fore legs, inhabits the trunks of oak-trees. It completes its transformations and comes out of the trees between the end of May and the 1st of July. It is oblong-oval and flattened, of a bronzed brownish or purplish black colour above, copper-coloured beneath, and rough like shagreen with numerous punctures; on each wing-cover there are three irregular smooth elevated lines, which are divided and interrupted by large thickly punctured impressed spots, two of which are oblique; the tips are rounded. Length rather more than half an inch.

Buprestis Harrisii is a small and broad beetle, of an entirely brilliant blue-green colour, except the sides of the thorax, and the thighs, which, in the male, are copper-coloured: it measures little more than three tenths of an inch in length. The larvæ inhabit the small limbs of the white pine, and young sapling trees of the same kind.

Buprestis Marioma, a species found in the south parts of Europe, is placed along with a closely allied one from America, and two or three other species in the genus *Chalcophora*.

BUPRESTIS MARIANA.

Dr. W. Harris, of Massachusetts, speaking of the great difficulty there is in discovering and dislodging the various grubs of tree-boring beetles, observes:—"When trees are found to be very much infested by them, and are going to decay in consequence of the ravages of these borers, it will be better to cut them down and burn them immediately, than to suffer them to stand until the borers have completed their transformations and made their escape." It is from Dr. Harris's able work on the Insects of Massachusetts that we have derived much of the information in this article.

BURBOT. (*Gadus lota.*) A fish belonging to the order *Malacopterygii*; very highly esteemed for its superior delicacy, and bearing some resemblance to the eel in its body, except that it is shorter and thicker. The head is broad and flat; the eyes small and lateral; the mouth wide; the jaws armed with several rows of sharp teeth; the lower jaw furnished with a beard of considerable length, and two small cirri seated on the top of the nose. The colour of the Burbot varies; some being dusky, and others of a dull green, spotted with black, and often with yellow: the belly in some is white; and the skin is remarkably smooth

BURBOT.—(GADUS LOTA.)

and slippery. The first dorsal fin is short, and the second is placed immediately behind it, extending almost to the tail; the vent is situated near the centre of the belly; the anal fin reaches almost to the tail; and the tail is rather short and rounded. The Burbot is found in several of the English rivers and lakes of the northern countries; but it is said to arrive at its greatest perfection in the lake of Geneva, where it sometimes weighs six pounds, though in this country it seldom exceeds two or three.

BURSATELLA. A genus of marine Mollusca, without shells, found in the Indian seas.

BUSTARDS. (*Otis; Otidæ.*) A genus and family of Cursorial Birds, distinguished for their powers of running and their shyness; some of the Asiatic species, such as the *Floricun*, are much sought for by the Indian sportsman as a delicacy for the table. We here mean to confine our attention to the two species indigenous to the British Islands, although now both are very rare birds.

The GREAT BUSTARD (*Otis tarda*) is the largest of European land birds, the male being about four feet long, and measuring nine feet from tip to tip of the wings when extended, while its weight is on an average twenty-five pounds. The head and neck are ash-coloured, and there is a tuft of feathers about five inches long on each side of the lower mandible. The back is transversely barred with black and bright ferruginous colours, and the primaries are black. The tail consists of twenty feathers, broadly barred with red and black; and the legs are naked, dusky, and without a hind toe. The female is not much more than half the size of the male, and has the crown of the head of a deep orange colour, traversed by red lines; the remainder of the head is brown; her colours are not so bright as the male, and she has no tuft on each side of the head. There is likewise another very essential difference between the male and the female; the former being furnished with a sack or pouch, situated in the fore part of the neck, and capable of containing nearly two quarts: the entrance to it is immediately under the tongue. This singular reservoir the bird is supposed to fill with water, as a supply in the midst of those dreary plains where it is accustomed to wander; it is also

[illegible] to make use of it when attacked by [illegible] of prey, by so violently ejecting it as [illegible] their attacks. These birds were [illegible] in considerable flocks on the [illegible] plains of Wiltshire, Dorsetshire, and [illegible] parts of Yorkshire; but as cultivation has advanced, they are become very [illegible]. They are very shy and vigilant, and

[illegible] BUSTARD. —(OTIS TARDA.)

[illegible] to [illegible] easy to shoot: they run with [illegible] speed, and aid their course with their [illegible] like the ostrich. They feed on grain, [illegible] worms, &c.; make their nest by merely [illegible] a hole in the earth; and lay two [illegible] as large as those of a goose, of a pale [illegible] tint, with dark spots. They seldom [illegible] far from their accustomed haunts, and have a great unwillingness to rise on the wing; but when once in the air, they can fly several miles without resting.

The LITTLE BUSTARD. (*Otis tetrax.*) This bird is very uncommon in England, but in France it is taken in nets, like the partridge. It is a very shy and cunning bird; if disturbed, it flies two or three hundred paces, not far from the ground, and then runs away much faster than any one can follow on foot. The female lays three or four eggs, of a glossy green colour, in June; and as soon as they are hatched, she leads them about as a hen does her chickens. The length of this bird is seventeen inches: the bill is pale brown; irides red; the top of the head black, spotted with pale rusty; the sides of the head, chin, and throat, reddish with black spots; the whole neck in the male is black, encircled with an irregular band of white near the top and bottom; the back and wings ruffous and brown, crossed with fine irregular black lines; the under parts of the body, and outer edges of the wings, are white; the tail tawny and white, with black bands; legs grey. The *thick-lowed Plover* is sometimes also locally named "Bustard," but belongs to another order, the Grallatorial Birds. [See ŒDICNEMUS.]

BUTCHER-BIRD. [See SHRIKE.]

BUTEO. [See BUZZARD.]

BUTTERFLY. (*Papilio.*) The popular English name of an extensive group of beautiful insects, belonging to the order *Lepidoptera*, as they appear in their fully developed state. They are distinguished from other insects by these generical characters; their antennæ are clubbed at the extremities; their wings, when at rest, are closed together over their backs; and they fly only in the day-time. Butterflies are also distinguished from the other Lepidoptera by the superior brilliancy of their colouring, and by the beauty of the under as well as the upper side of the wings. "The Butterfly," as Mr. Knapp observes, "light, airy, joyous, replete with life, sports in the sunshine, wantons on the flower, and trips from bloom to bloom, gay as the brilliant morn, and cheerful as the splendour of heaven: heat and light appear to be the very principle of his being; in a cloudy or a chilly atmosphere his energies become suspended, and, closing his wings, he reposes like a sickly thing upon some drooping flower: but let the cloud disperse, the sun break out, he springs again to active life; associating with the birds of day, and denizen of the same scenes, he only seems of a less elevated order."

Butterflies are very careful in depositing their eggs in places where they are likely to be hatched with the greatest safety and success. They lie dormant through the winter; but when the sun calls forth vegetation, and vivifies the various eggs of insects, caterpillars are seen on various plants, eating their leaves, and preparing for a state of greater perfection. Their form is long and cylindrical, and they consist of thirteen segments, including the head; they have eight feet, and nine spiracles on each side. Those feet which are attached in pairs to the first three segments of the trunk inclose the parts which are developed into the permanent legs of the future Butterfly; the remaining five pairs of feet are membranous, short, and thick, and are finally lost with the moultings of the skin.

The external form of the chrysalids varies according to the species of Butterfly that inhabits them; in all, however, there are apertures opposite to the thorax, by which respiration is carried on during the whole period of their inactive state. After the appointed time, when the creature has acquired sufficient vigour, the shell is broken, which at once constituted "the grave of the caterpillar and the cradle of the butterfly:" the down already grown upon the insect has completely separated it on all sides from the shell, which by the action of the head is broken opposite to that part, and affords free egress to the prisoner it so long confined. The wings of the Butterfly, on its first appearance, are closely folded; but by the help of a fluid constantly circulating through them, they are soon expanded, and sufficiently hardened, by the action of the air, to endure the efforts of flying. It is then that the insect enters upon a more enlarged sphere of action, with increased powers: he ranges from flower to flower, darting his rostrum into their nectaries for the delicious stores they contain. Then, too, in the full

possession of every faculty granted to his race, he prepares to multiply and perpetuate it.

This last and most considerable metamorphosis is attended with a greater change in the economy of the insect than of the preceding; for not only the skin, but the teeth, jaws, and even the cranium, are left behind. The work of Herold, on the transformation of the Cabbage Butterfly, may be judiciously consulted by *the student;* while Lyonet's researches and great book on the caterpillar of the Goat Moth, teach many particulars of the transformation of a large moth. There is a paper on the wings of *Lepidoptera* by Bernard Deschamps well worth the attention of persons fond of the microscope (see "Annales des Sciences Naturelles," 2nd ser., t. III. 1835). The quantity of food taken by them in their last state is comparatively small to what they antecedently devoured. For a short time after their appearance on the wing, they discharge some drops of a red-coloured fluid; but its appearance on the surface of the earth has at different times been regarded, by vulgar superstition, as drops of blood fallen from the clouds, and was presumed to be portentous of some heavy calamity.

Various insects prey upon the Butterfly, or hasten the approach of its dissolution. Many species of Ichneumonidæ perforate the body of the insect while a caterpillar, and there deposits its eggs; and although the caterpillar continues to live, and is transformed into a chrysalid, no Butterfly is produced from it, those internal parts that were essential to its perfection being consumed by the larvæ of the ichneumon. From the great fecundity and variety of the insects of this genus, they probably would soon cover the earth, did not nature provide a bar to their increase by multiplying their enemies: hence they are destined to become the food of a great number of animals of various kinds, some of which swallow them entire, others macerate their bodies; while many accomplish their destruction by gradually sucking their juices. It has been calculated that a single pair of sparrows, in order to supply themselves and their young, may destroy three thousand three hundred and sixty Butterflies in one week.

"The clothing of the organs of flight in the Butterfly excites the admiration of the most incurious beholder. The gorgeous wings of these universal favourites owe their beauty to an infinite number of little plumes, thickly planted in their surfaces, and so minute as to seem like powder; but which are in fact an innumerable number of small scales, varying in shape and length in different species, and discoverable only by the assistance of a microscope.

"The Butterfly requires no other food than the nectareous juices which are distilled from flowers, or the saccharine substance which exudes from the leaves of vegetables; it will sometimes alight and suck the sweets of ripe fruit that has been broken by its fall. The skies are its proper habitation—the air is its element; the pageantry of princes cannot equal the ornaments with which it is invested, or the rich colouring that embellishes its wings. There is nothing in the animal creation so beautiful or splendid as many species of these insects; they serve to banish solitude from our walls, and to fill up our idle intervals with the most pleasing speculations.

"Butterflies fly generally only in the day. They accompany the sun in his course, and before he sets disappear. With us, says Mr. Samouelle, many of the species are extremely local; and, from the shortness of their lives, require greater assiduity in the collector, and a wide range of search, than is generally supposed. As an illustration of this fact, we must observe that the number of *Papilionidæ* found in England is about seventy-two. Of this number not more than fifty are to be met with within twenty-five miles of London; and of these several are confined to the vicinity of a chalk-cliff, or are peculiar to a meadow or a certain wood. Even in these situations their appearance in the perfect state is limited but to a few days and at a certain season of the year. Of the remaining number, not found within this distance from London, some are confined to fens, nearly a hundred miles distant from the metropolis, and others to the mountains of Scotland; but they are all equally limited in the times of their appearance and the shortness of their lives. There is also another circumstance in the history of these insects, which must not be passed over in silence; and that is, there are several species which, from some hitherto unknown cause, appear in the proper season, but in certain years only, when they will be found in abundance, and probably extended over a vast tract of the country. These, however, disappear, and not a single specimen is to be found for a period of many years, when they will again be seen as plentiful as before. This is a circumstance that is not confined to England, where it might be attributed to our ever-varying climate, but occurs also in tropical countries."—*Ibid. Cab. Vade Mecum.*

"If you denude the wings of any Butterfly, which you may easily do by scraping it lightly on both sides with a penknife," as Messrs. Kirby and Spence observe, "you will be amused to trace the lines in which the scales were planted, consisting of innumerable minute dots: the lines of the under side, in some cases, so cut those of the upper side, as by their intersection to form lozenges. With regard to the position of the scales on the wing, they usually lie flat, but sometimes their extremity is incurved. But though the general clothing of the wings of *Lepidoptera* consists of these little scales, yet in some cases they are either replaced by *hairs* or mixed with them. Thus, in the *clear* parts of the wings of *Heliconiana, Attici*, &c., short inconspicuous hairs are planted: in a large number of the Orders the upper side of the anal area of the secondary wings is hairy; in several Crepusculars, where there is a double layer, as before mentioned, the upper one consists of dense hairs, except at the apex, and the lower one of scales; and in most of them the scales of the primary wings are piliform, and the secondary

y what approach very nearly to

r of exotic Butterflies is very
s orders and in genera; and
referred [we limit ourselves to
s] to Dr. Horsfield's elaborate
s of Java, but especially to the
ble work on the Genera of Di-
ptera, by Edward Doubleday,
trated by William Hewitson,
d by Mr. Westwood since Mr.
death. (Our space prevents us
ading to the numerous genera of
s insects detailed in this splen-
It is, however, but bare justice
a more beautiful work has
ublished. For a very excellent
British Butterflies, with coloured
of the Insects in their various
ures of the plants on which the
ed, we can also heartily recom-
ney's British Butterflies, partly
Westwood. Butterflies, by their
ts of colour, and other pecu-
only charm the eye, but have
able information to artists.
an Dyck and our countryman
known to have been indebted
for many fine hints on colour,
mony and contrast. In the
we must confine ourselves to
genera as much as possible. [See
ETIA; MELITÆA; ARGYNNIS;
VANESSA; APATURA LUCÆNA;
IS; THECLA; HIPPARCHIA;
PAENASSUS, &c.]

D. (*Falco lutea of Linnæus.*) This
ced to be the most common in
ll the hawk tribe. It has a thick
; measures about twenty-two
gth, and the full expansion of its
t fifty. It is usually of a ferru-
above, and yellowish white be-
large longitudinal spots and
all is barred with black and ash-
lp is dusky white. It breeds in
ods, generally fixing on the old
w, which it enlarges, and lines
d other soft materials. It lays
ggs, which are sometimes wholly
at others spotted with yellow;
e female happens to be killed
time of incubation, the cock
l rears the brood. The young
the old birds for some time after
nest; a circumstance unusual
ds of prey, which always drive
ng as soon as they can fly. The
very sluggish and inactive, re-
ched on the same bough for the
l of the day, and always found
e place. It feeds on birds, frogs,
s, and mice. By modern natu-
lared in the genus *Buteo*. [For
ard, see FERRIS.]

S; BYRRHIDÆ. A genus and
leoptera. The insects belonging
s have an ovate body, convex or
r in some species, with the elytra
a short pile, and the head is re-
her the thorax. *Byrrhus pilula*
size of the common Lady-bird;
its colour is a dull brown, with a few obscure blackish lines down the wing-shells: it is of an extremely convex shape, and, when disturbed, contracts its limbs, and lies in an inert state, like an oval seed or pill, while thus counterfeiting death as a means of escape from danger. It is found on various plants in gardens and elsewhere.

BYSSOARCA. A sub-genus of Molluscous animals, affixed by byssiform filaments to other bodies, a particular muscle being protruded through the gaping part of the shelly valves.

BYSSOMYA. A genus of Acephalous Molluscs, which live in the fissures of rocks, attached by a byssus: sometimes the animal buries itself in the sand or lodges in small stones, &c.

CACHALOT. (*Physeter macrocephalus.*) The Spermaceti Whale; the head of which nearly equals the rest of the body in length, and surpasses it in bulk. It is an object of great commercial importance on account of the oil and spermaceti which it yields. Mr. Beale has published a most admirable and readable work on it. [See WHALE.]

CACHICAME. [See ARMADILLO.]

CACTORNIS. A subgenus of Passerine birds, closely allied to Geospiza, but differing from it in the beak being elongated, somewhat like that of a Quiscalus, and very sharp-pointed. The typical species is Cac-

CLIMBING CACTUS BIRD.
(CACTORNIS SCANDENS.)

tornis scandens. The male is of a sooty black, the female brownish and spotted. This species was found by Mr. Darwin in the Galapagos; its most favourite resort is the *Opuntia Galapageia*, a species of the Cacti tribe; about the fleshy leaves of which they hop and climb, even with their back downwards, whilst feeding with their sharp beaks,

both on the fruit and flowers. They frequently also alight on the ground and search for seeds on the parched volcanic soil.

CADDICE-WORM, or CAD-BAIT. [See PHRYGANEA.]

CÆCILIA. The name of a genus of Serpents, about a foot in length, and having much the appearance of an eel. They are natives of South America, and are said to be innoxious.

CAIMAN. [See ALLIGATOR.]

CALANDRA: CALANDRIDÆ. A genus and family of Coleopterous insects, closely allied to the *Curculionidæ;* some of the minute species of which commit great havoc in granaries, both in their larva and perfect state. The species are very numerous, and among them is the well-known Corn-weevil (*Calandra granaria.*) This insect bores a hole into the grain with its proboscis, and there deposits an egg, which turns to a little grub, and devours the whole of the inside of the grain, leaving the husk entire. Another species of Calandra, distinguished by its having four red spots on its elytra, attacks rice in the same way as the one above mentioned does wheat.

These insects must not be confounded with the still more destructive larvæ of the Corn-moth (*Tinea granella*), which also attack stored grain, nor with the orange-coloured maggots of the Wheat-fly (*Cecidomyia tritici*), which are found in the ears of growing wheat. Although the grain-weevils are not actually injurious to vegetation, yet as the name properly belonging to them has often been misapplied, some remarks upon them here may not be inappropriate.

The true Grain-weevil or Wheat-weevil of Europe (*Calandra granaria*), in its perfect state, is a slender beetle of a pitchy red colour, about one-eighth of an inch long, with a slender snout slightly bent downwards, a coarsely punctured and very long thorax, constituting almost one-half the length of the whole body, and wing-covers that are furrowed, and do not entirely cover the tip of the abdomen. This little insect, both in the beetle and grub state, devours stored wheat and other grain, and often commits much havoc in granaries and brewhouses. Its powers of multiplication are very great, for it is stated that a single pair of these destroyers may produce above six thousand descendants in one year. The female deposits her eggs upon the wheat after it is housed, and the young grubs hatched therefrom immediately burrow into the wheat, each individual occupying alone a single grain, the substance of which it devours, so as often to leave nothing but the hull; and this destruction goes on within, while no external appearance leads to its discovery, and the loss of weight is the only evidence of mischief that has been done to the grain. In due time the grubs undergo their transformations, and come out of the hulls in the beetle state, to lay their eggs for another brood. These insects are effectually destroyed by kiln-drying the wheat; and grain that is kept cool, well ventilated, and frequently mo is said to be exempt from attack.

CALAPPA, or BOX CRAB. A genu Crustacea, belonging to the family *Co pidæ*. They are named by the French *de mer*, from their crested chelæ, which large, equal, compressed; with their u edge, which is notched or crested, much elevated, and fitting exactly to external border of the shell or carap so as to completely cover the mouth anterior parts: the rest of the feet s and simple; carapace short and con forming, behind, a vaulted shield, w which the posterior legs are hidden w the animal is in a state of repose: mounted on short pedicles, and not far ap There are several species widely diffu some inhabit the seas of the Indian A pelago, and of New Holland: others are

CALAPPA CRISTATA.

with in the Pacific and Atlantic oceans, seas of South America, &c.: others, ag inhabit the Mediterranean sea. They quent the fissures of rocks, some of them a great depth. The females deposit t eggs in summer.

CALATHUS. A genus of Coleopte insects, belonging to the *Carabidæ*. Seve species are found in the British islands, u frequently under stones and house rubbi

CALLICHTHYS. A genus of abdomi Malacopterygious fishes, family *Siluri* The body and head are protected by la hard, scaly plates; the mouth is furnis with four long cirri; the teeth are v small; the eyes are also small, and situ on the side of the head. They are native South America and other hot climat where the rivers frequently dry up; they can not only live for a considera time out of water, but they are said to perfo long journeys over land, directing th course to some other stream.

CALLIDIUM. A genus of Coleopte Insects, belonging to the family *Longicor* one species of which (*Callidium Sali* in the larva state is particularly destr tive to fir timber. This is a flattish re black beetle, with some downy whit spots across the middle of the wing-cove the thorax is nearly circular, is covered w fine whitish down, and has two eleva polished black points upon it; and the w covers are very coarsely punctured. It habits fir and spruce timber, and may of

transversely oval, and downy, ing a greenish tinge; and the e rough with thick irregular s about half an inch in length; in great abundance, in the middle parts of Europe, on piles from the middle of May to the and the larvæ and pupæ are in splitting the wood. They t under the bark, where their ding tracks may be traced by saw-dust with which they are before they are about to be they bore into the solid wood of several inches. In this not so common.

RPHA. A genus of Lepidop- belonging to the family *Eum-* of these (*Callimorpha Jacobeæ*) antiful and common Moth, its expanded measuring about a half in width: on the upper are of a greenish black colour, nd pink spots at the apex, and pink streak parallel with the . The under wings are entirely the margins, which are of the as the ground-colour of the upper head, body, and legs are quite e larva feeds on the common *uccis Jacobæa*); hence the name .

TUS. A genus of Coleopterous longing to the family *Carabidæ*. *C. hortus* is found in this coun- about a quarter of an inch long: and under parts of the abdomen greenish black colour, the thorax -yellow, and the wing-cases are th six black spots: the antennæ are black; the head and thorax thickly punctured, and the elytra ate-striated.

and appreciated. The pine-forests, for instance, are exposed to the ravages of various lepidopterous insects, such as *Sneriathus pinastri*, and, in particular, *Gastropacha pini*. Now, a pine-tree, once stripped of its leaves, or needles, as the Germans more aptly term them, does not recover like an oak or a sycamore, but dies. Scarcely is vegetation at an end, when the Longicornes seize upon the trunk, and burrow in it; the wood-ants tunnel it in all directions, and it thus becomes worthless. Many hundred acres of the finest timber are thus often destroyed. It is an interesting sight to any but the owner, to visit a forest under the infliction of Gastropacha pini; the thousands of caterpillars eagerly feeding produce a distinct crackling sound, as the hard, dry pine-leaves yield to their persevering jaws. The large moths fluttering lazily about, or perched on the leafless sprays, await the approach of evening, when the gamekeepers kindle large fires in the open spaces. Into these multitudes of moths fall, and are consumed; but this, with all that are destroyed by hand, or devoured by birds, would avail but little, but for the services of certain insects. Our Calosoma is one of the most active; both larva and beetle mount the trees, and slaughter both moths and caterpillars, far more than are requisite to satisfy their appetite. Those seasons in which the pine-moth is most numerous are also remarkably favourable to the Calosoma, and to several kinds of ichneumons, which also prey upon the pine-moth."

CALYMENE. A genus of Trilobite Crustacea, comprising the well-known *C. Blumenbachii*, found in the transition limestone of Dudley. Head deeply divided by two longitudinal grooves, abdominal rings, &c.

CALYPTORHYNCHUS. A genus of

Gould, in his very magnificent "Birds of Australia," has figured all the species of this genus; and from his account of the species called *Wy-la* (from its whining call note) by the natives of N. S. Wales, and *Calyptorhynchus funereus* by naturalists, we extract the following observation:—it is usually met with in small companies of from four to eight in number, except during the breeding season, when it is only seen in pairs. Its food is much varied; sometimes the great belts of *Banksia* shrubs are visited, and the seed-covers torn open for the sake of their contents, while at others it searches greedily for the larvæ which are deposited in the wattles and gum trees (*Eucalyptus*). Its flight is very heavy, flapping, and laboured; but Mr. Gould informs us that he has sometimes seen it dive between the trees in a most rapid and extraordinary manner. The eggs are white, two in number, and deposited on the rotten wood in the hollow branch of a large gum tree.

CAMBERWELL BEAUTY [BUTTERFLY.] A name given to a species of Butterfly, of the genus VANESSA [which see].

CAMEL. (*Camelus.*) A genus of mammiferous ruminating quadrupeds without horns, further distinguished by the possession of incisive, canine, and molar teeth: the upper lip is divided; the neck long and arched; having one, or two, humps or protuberances upon the back, and naked callosities at the joints of the leg, the lower part of the breast, &c. They have a broad, expanded, elastic foot, terminated in front by two comparatively small hoofs, or toes; the whole structure of it being admirably fitted for enabling the animal to travel with peculiar ease and security over dry, stony, and sandy regions. The native country of this genus is said to extend from Mauritania to China, within a zone of 1000 miles in breadth.

CAMEL.—(CAMELUS BACTRIANUS.)

The common Camel (*Camelus Bactrianus*), having two humps, is only found in the northern part of this region, and exclusively from the ancient Bactria, now Turkestan, to China. It is larger than the Dromedary; the limbs are not so long in proportion to the body; the muzzle is larger and more turnid; the hair of a darker brown, and the usual gait slower; but the most obvious distinction is afforded by the Bactrian Camel having two humps, and the Dromedary or Arabian Camel having but one, which single hump occupies the middle of the back, riding gradually on all sides towards its apex.

The Arabian, or single-hump Camel (*Camelus dromedarius*) is found throughout the entire length of this zone, on its southern side,

DROMEDARY.—(CAMELUS DROMEDARIUS.)

as far as Africa and India. The general height of the Arabian Camel, measured from the top of the dorsal hump to the ground, is about six feet and a half, but from the top of the head when the animal elevates it, not much less than nine feet: the head, however, is generally so carried as to be nearly on a level with the hump, or rather below it, the Camel bending the neck extremely in its general posture. In some particular attitudes, perhaps, the Camel may be said to have an elegant and picturesque appearance, yet its general aspect, and more especially its dorsal hump, at first sight, is apt to impress on the mind the idea of deformity, rather than a truly natural conformation.

It is highly probable that the Camel has long ceased to exist in its wild or natural state, as it has been enslaved by man from the earliest times of which we have record. Unlike the elephant, and other animals which cease to breed in a state of captivity, the Camel is as prolific as if at liberty; and vast numbers are raised and employed throughout the East, especially in the commerce carried on between the people residing in the vicinity of the great deserts. In regions where water is scarce, and wells or springs are several days' journey distant from each other, it would be impossible to traverse the country with the usual beasts of burthen. But the Camel can abstain from drinking for seven or eight days together without injury—an important advantage, which is owing to the possession of an additional cavity in the stomach, destined to receive water, whenever it can be procured, and capable of retaining it unchanged for a long time. "But," as the writer of the zoological articles in Brande's Dictionary observes, "besides a reservoir of water to meet the exigencies of long journeys across the desert, the Dromedary and Camel are provided with a storehouse of solid nutriment, on which they can draw for supplies long after every digestible part has been extracted from the contents of the stomach: this storehouse consists of one or two large collections of fat stored up in ligamentous

...d by the spines of the dorsal ...d forming what are called the ...ers the Camel is in a region of ...hump becomes plump and ex-

...SKULL OF DROMEDARY, WITH ...LEWED FROM BENEATH AND FROM ABOVE.

...after a protracted journey in ...s it becomes shrivelled and ...s ligamentous constituent, in ...of the absorption of the fat. ...d his teleological reasoning, or ...t of design, so far as to assert ...ps on the backs of the Camel ...of slavery, and intended to ...to the burthens of their task- ...d he supported this ingenious ...unfounded assertion that the ...sences did not belong to the ...e nature. But the true uses of ...ps, as of the water-cells, relate ...ncies of the *Camelidæ* of the ...r every condition."

...TS OF CAMELUS DROMEDARIUS.

...ing strength and activity surpassing ...nd beasts of burthen, docile, patient ...r and thirst, and contented with ...antities of the coarsest provender, ...al is one of the most valuable gifts ...ideous. There is nothing, however, ...ternal appearance of the animal to ...the existence of any of its excellent ...s. In form and proportions, it is ...posite to our usual ideas of perfection ...auty. A stout body, having the ...ndigured by one or two humps; limbs ...slender, and seemingly too weak to ...rt the trunk; a long, thin, crooked ...surmounted by a heavily-proportioned ...are all ill suited to produce favourable ...sions. Nevertheless, there is no crea- ...more excellently adapted to its situ-

ation, nor is there one in which more of creative wisdom is displayed in the peculiarities of its organization. To the Arabs and other wanderers of the desert, the Camel is at once wealth, subsistence, and protection. The milk furnishes them with a large part of their nutriment. The flesh of the young animal is one of their greatest luxuries; of the skins they form tents, or manufacture them into saddles, harness, pitchers, shields, and many other articles; the various sorts of hair, or wool, shed by the Camel, are wrought into different fabrics; and its very excrements serve as fuel, or are applied to other useful purposes.

These animals are trained, when extremely young, to the labours which they are afterwards to perform: and with this view, when but a few days old, their limbs are folded under their body, and they are compelled to remain on the ground whilst they are loaded with a weight, which is gradually increased as they increase in strength. The pace of the Camel is a high and swinging trot, which, to persons unaccustomed to it, is at first disagreeable and apparently dangerous, but is afterwards tolerably pleasant and secure. The Arabians in general ride on a saddle that is hollowed in the middle, and has at each bow a piece of wood placed upright, or sometimes horizontally, by which the rider keeps himself in the seat: and the animal is guided, or stopped, by means of a cord that serves as a bridle, and is affixed to a ring which is passed through his nostrils. Small Camels carry from 600 to 800 lbs.; the largest and strongest bear 1000 lbs. or upwards from thirty to thirty-five miles a day; but those which are used for speed alone are capable of travelling from sixty to ninety miles a-day. When a caravan of Camels arrives at a resting or baiting place, they kneel, and, the cords sustaining the load being untied, the bales slip down on each side. They generally sleep on their bellies, crouching between the bales they have carried: the load is, therefore, replaced with great facility. In an abundant pasture they generally browse as much in an hour as serves them for ruminating all night and for their support during the next day. But it is uncommon to find such pasturage, and they are said to prefer nettles, thistles, cassia, and other prickly vegetables, to the softest herbage.

The female goes with young twelve months, and brings forth one at a birth. Her milk is very rich, abundant, and thick, but of rather a strong taste; though when mixed with water it forms a very nutritive article of diet. Breeding and milk-giving Camels are exempted from service, and fed as well as possible, the value of their milk being greater than that of their labour. The young Camel usually sucks for twelve months; but such as are intended for speed are allowed to suck, and exempted from restraint, for two or three years. The Camel arrives at maturity in about five years, and the duration of its life is from forty to fifty years.

There are several races or varieties both of the Arabian and the Bactrian Camel,

differing, like those of horses, in strength, size, swiftness, and elegance of form. A breed of peculiar swiftness is said to be reared in China; a white variety occurs in some parts of Siberia; and a hybrid or mixed breed is occasionally obtained between the Bactrian and Arabian Camel.

CAMELOPARD and CAMELEOPARDALIS. [See GIRAFFE.]

CAMELUS. [See CAMEL.]

CAMPAGNOL. A French name sometimes given to the small Rodent animals called *Voles*. [See VOLE.]

CAMPANULARIA: CAMPANULARIADÆ. A genus and family of Zoophytes. This division, which contains two or three genera, included by Linnæus in his genus *Sertularia*, is thus characterized in the truly elegant and scientific work of Dr. Johnston, entitled a History of the British Zoophytes—a work indispensable to persons who wish to study those flowers of the ocean, the zoophytes, so abundant on our coasts—"Polypedom plantlike, horny, rooted by a creeping tubular fibre, branched, or simple; the polype cells thin and campanulate,

CAMPANULARIA DICHOTOMA.

terminal, elevated on a ringed footstalk, disposed either alternately or irregular." For the other characters of the family and different genera, Campanularia, Laomedea, and Cymodocea, we must refer to the above work, only alluding to a very beautiful British species, first described by Mr. Ellis as the small climbing Coralline with bell-shaped cups. This minute species is parasitical on other corallines and sea-weeds, and forms a beautiful object for the microscope. Dr. Johnston has seen the antenna of a crab so profusely invested with this zoophyte as to resemble hairy brushes; the coralline in this instance having chosen a station by which it obtained all the benefits of locomotion.

CANARY-BIRD (*Carduelis canaria.*) The Canary-bird, or Canary-finch, as it is sometimes called, is a well-known captive songster in this and most other European countries. It is a native of the Canary Islands, but it has continued so long in a domestic state that its native habits seem almost forgotten. In the wild state the prevailing colour is grey or brown, however, with other colours, but ne ing the brilliancy of plumage exh the bird in captivity. Dr. Heine describes its character and habits in where these birds abound, says, " in thick, bushy, high shrubs and t roots, moss, feathers, hair, &c.; February; lays from four to six eggs; and hatches five, and often in the season. It is a delightful with, beyond doubt, much of the gale's and skylark's, but none of lark's song." It was brought int early in the 16th century, and is b have spread from the coast of Ita a vessel, which was bringing to I number of these birds besides its dize, was wrecked. The climate vourable, they increased, and w tainly have become naturalized, not been rendered scarce by the possess them, as well as from th few besides male birds brought ove

In their native islands, a regio celebrated for the beauty of its i and the harmony of its groves, th birds are of a dusky-grey colour, a different from those usually seen i that some naturalists have even whether they are of the same spe original stock has undergone changes from its being domestica the climate, and from the union analogous to it, that now we have of all colours. "Those Canaries the upper part of the body of a du or linnet-brown, and the under yellowish green of the green-bird, w brown eyes, are the strongest, nearly resemble the primitive r yellow and white often have red are the most tender. The chestnu most uncommon, and hold a mi for strength and length of life be two extremes. But as the plum intermediate ones is a mixture of t cipal colours, their value depen pretty and regular manner in w are marked. The Canary that is mired amongst us now is one with white or yellow; the head, parti crested, wings, and tail, yellowish second in degree is of a golden ye the head, wings, and tail black, o dusky grey. Next follow the grey ish, with a yellow head and collar yellow with a blackish or green tu which are very much valued. As that are irregularly spotted, speckl riegated, they are much less sought are used to pair with those of o white, yellow, grey, brown-grey, like."

In choosing Canary-birds, those ferable which appear bold and l their eyes look cheerful and brig sign of health; but, on the contra hide their heads under their w gather up their bodies, it is symp their being disordered. The mel song should also be regarded in ma lection; for some will open with t

ngale, and, after running through of modulations, end like the tit-rs, again, will begin like the sky-by soft melodious turns, fall into of the nightingale. Lessons may this bird in its domestic state; but note is loud, shrill, and piercing. birds sometimes breed all the year it they most usually begin to pair and to breed in June and August. ny and the Tyrol, where the breed-se songsters forms the occupation rs, and from whence the rest of principally supplied, the appara-ending Canaries is both large and . A large building is erected for h a square space at each end, and municating with these spaces. In ts are planted such trees as the er. The bottom is strewed with which is cast rape-seed, chickweed, other food as they like. Through-ner compartment, which is kept placed brooms for the birds to are being taken that the breeding-guarded from the intrusions of the th us, however, the apparatus is expensive; a breeding-cage often and, at most, a small room, without ular preparation.

LLARIA. A genus of Molluscous elonging to the *Endomostomata* of lis. There are many species, most re found in the Indian and African

CANCELLARIA CRYCEA.

many are from the warm latitudes rde side of S. America. There is a h of this genus by G. B. Sowerby, .S., in the "Conchological Illustra-ith figures and descriptions of all e then known. To this work we renders, as well as to Mr. Sowerby's rus Conchyliorum." The genus is name from *cancellatus*, cross-nd the shell is characterized as oval ed; spire generally short, slightly and pointed; mouth oval, having ry short canal or a notch only; the marked within by transverse ridges; spread over part of the body whorl, ng in a straight, thick, obtuse co-with several irregular plaits. The e rare, but not remarkable; and ly rough to the touch, and striped.

ER. The name applied by Lin-nearly all the species of the class a. It is now restricted by naturalists ountry to the genus of which the common black-clawed crab (*C. pagurus*) is the type. Other species are found in North America and South America; and one from New Zealand was sent to the British Museum by Dr. Andrew Sinclair. [See CRAB.]

CANIS. In the Linnæan system of zoology, a distinct and very large genus of animals of the class *Mammalia*, order *Feræ*, including all the Dog kind. The characters of this genus are,—that the several species (the common dog, the wolf, the jackal, the fox, &c.) have six upper fore-teeth, the lateral ones being longest, and the intermediate ones of a lobated figure; that there are also six fore-teeth in the lower jaw, of which the lateral ones are lobated; that the canine teeth are single and incurvated; and that the grinders are six or seven in number. [See DOG.]

CANTHARIDÆ. A family of Coleopterous insects, the species of which are numerous and widely diffused. They differ from each other in their size, shape, and colour: the largest are about an inch long. Some are of a pure azure, others of a pure gold, some of a mixture of gold and azure, and others scarlet; but all are brilliant, and very beautiful.

The CANTHARIS VESICATORIA, *Spanish Fly*, or *Blister Beetle*, so well known for its medical uses, is the most noted. This insect is about three quarters of an inch in length, and of a beautiful metallic gold green colour, sometimes changing into bluish green: the head is smooth and polished, and in the forehead are two eyes of a golden colour; the

"SPANISH FLY," OR BLISTERING BEETLE. (CANTHARIS VESICATORIA.)

wing-cases are membranous, convex above and hollow beneath; thin, but strong, and covering the upper part of the body. The abdomen is composed of eight moveable rings, furrowed from end to end; the legs and antennæ are bluish-black. In Spain, Portugal, and Italy these insects are abundant; in France also they are sometimes found; but are rarely seen in this country. They frequent ash trees, and feed upon its leaves; they are also to be met with on the poplar, the rose, the honey-suckle, and some other sweet-scented shrubs. Although, as we have just said, they but rarely occur in this country; yet at the meeting of the Linnæan Society, Nov. 7. 1837, Mr. Newman exhibited a number of specimens, taken during the preceding summer, near Colchester, where they had appeared by millions, stripping the ash-trees of their leaves. When touched they feign death, and emit a highly offensive odour; which, however, is a guide to those whose business it is to catch them. The

most common method of killing them is to expose them to the vapour of hot vinegar: they are then dried on hurdles, and put away in boxes for use.

In Silesia (says Mr. Slater) the *Cantharis vesicatoria* is only a summer guest; it appears there suddenly in June, in rather numerous swarms, which arrive during the night, and are found early in the morning upon the ash, honey-suckle, and some other trees and shrubs, which they soon strip of leaves. Their presence is announced by a most penetrating odour, perceptible at a great distance from the trees on which they sit, and suggesting unpleasant ideas of blistering ointment. Their susceptibility to cold is remarkable; the freshness of early dawn is sufficient to chill and benumb them, and if the trees be then gently agitated, they fall down. In this manner they are collected for sale, and killed by sprinkling with cold water.—(*Zoologist.*)

In North America, according to Dr. Harris, potato-vines are very much infested by two or three kinds of Cantharides, swarms of which attack and destroy the leaves during midsummer. One of these kinds has thereby obtained the name of the *potato-fly*. It is the *Cantharis vittata*, or striped Cantharis. It is of a dull tawny yellow or light yellowish red colour above, with two black spots on the head, and two black stripes on the thorax and on each side of the wing-covers. The under-side of the body, the legs, and the antennæ are black, and covered with a greyish-down. It is more than half an inch long; the thorax is much narrowed before; and the wing-covers are long and narrow, and cover the whole of the back. It does much mischief in potato fields and gardens, eating up not only the leaves of the potato, but those of many other vegetables.—Another species, a jet-black Cantharis (*Cantharis atrata*), measuring nearly half an inch in length, may be seen, about the middle of August, on the potato-vines, and also on the blossoms and leaves of various kinds of golden-rod.—These insects, and others of a similar kind, may be easily taken by brushing or shaking them from the potato-vines into a broad tin pan, and emptied into a covered pail containing a little water, which, by wetting their wings, prevents their flying out when the pail is uncovered; or they may be caught by gently sweeping the plants they frequent with a deep muslin bag-net. They are easily killed by throwing them into scalding water for one or two minutes. (*Jas. of Mosaics.*)

CAPERCAILIE, or CAPERCAILZIE. The Scotch name for the Wood-Grouse (*Tetrao urogallus.*) [See GROUSE.]

CAPRA. [See GOAT.]

CAPRIMULGUS; CAPRIMULGIDÆ. A genus and family of Passerine birds, popularly termed *Moth-hunters* and *Goat-suckers*. Their habits are nocturnal, and they have the same light soft plumage, minutely mottled with grey and brown, that characterizes other night-birds. Their eyes are large; the beak, very deeply cleft, and generally armed with strong *vibrissæ*, [illegible] of engulphing the largest insects, [illegible] retained by means of a glutinous sal[illegible] nostrils, placed at its base, are [illegible] tubes; their wings are lengthened; [illegible] short, with plumed tarsi, and a [illegible] connecting the basal portion of the [illegible] claw of the middle toe is usually pe[illegible] on its inner edge; and the outer toe [illegible] four phalanges, a conformation [illegible] rare among birds. They live solit[illegible] rather permanently in pairs, and [illegible] puscular in their time of action, [illegible] moths and other nocturnal insect[illegible] deposit their [two] eggs on the bare [illegible] and have generally singular voices [illegible] bear the same relation to the Swifts [illegible] Owls do to the Hawks; their gene[illegible] tomy very much resembling that [illegible] Cuckoos. The common European [illegible] (*Caprimulgus Europæus*) is remark[illegible] the loud sound it emits, like the [illegible] spinning-wheel. Among the foreign [illegible] a great number have longer tarsi, [illegible] for running on the ground; and [illegible] some with an appearance of aigrette [illegible] head. [See GOAT-SUCKER; STE[illegible] WHIP-POOR-WILL; ÆGOTHELES; [illegible] NIS.]

CAPROMYS. A genus of *Rode*[illegible] ferent species of which are found [illegible] West India Islands. They are herb[illegible] preferring aromatic plants. In the[illegible] ments they are slow, somewhat like [illegible] One of these was described by Ovied[illegible] *Chemis*, a name said still to be ap[illegible] the *Capromys Fournieri*. Two other [illegible] *C. prehensilis* and *C. Poeyi*, are de[illegible] To this genus probably also belo[illegible] "Musk Cavy," described by some as [illegible] almost as large as a rabbit; the upp[illegible] of its body is black, and its belly is p[illegible] white. It inhabits Martinico, and o[illegible] Antilles islands; burrows under grou[illegible] smells so strongly of musk, that its [illegible] may be traced by the perfume.

CAPYBARA. (*Hydrochærus cap*[illegible] A Rodent animal which has also obtai[illegible] name of the Water-hog. It grows to [illegible] of a hog of two years old, and is class[illegible]

CAPYBARA.—(HYDROCHÆRUS CAPYB[illegible]

the *Caviidæ*. It inhabits various par[illegible] America, but is most common in Bra[illegible] feeds not only on various vegetable[illegible]

particularly on sugar-canes, but also on fish; for which purpose it frequents rivers, swimming with the same facility as the otter, and taking its prey in a similar manner. The Capybara is, in general, considered as of a gentle disposition, and, though shy and timid, is readily tamed and made familiar. It has a very large head, and a thick, divided nose, on each side of which are strong and large whiskers; the ears are small and rounded; the eyes large and black; and the upper jaw longer than the lower. The neck is short; the body thick, and covered with short, coarse, brown hair: the legs short, and the feet long. Like the Peccary, the Capybara is destitute of a tail; and, dissimilar to all others of this kind, instead of a cloven hoof, it is in a manner web-footed, and thus adapted for an aquatic life.

These great Rodents are generally called 'Carpinchos;' they considerably frequent the lands in the mouth of the Plata, where the water is quite salt, but are far more common on the borders of freshwater lakes and rivers. Near Maldonado three or four usually live together. In the day-time they either lie among the aquatic plants, or very near to the turf plain. When viewed at a distance, from their manner of walking and colour, they resemble pigs: but when seated on their haunches, and attentively watching any object with one eye, they resemble the appearance of their congeners, the Guinea. Both the front and side view of their head has quite a ludicrous aspect, from the great depth of their jaw. These animals, at Maldonado, were very tame; by caressingly walking, I approached within three yards of four old ones. As I approached more and nearer they frequently made this peculiar noise, which is a low abrupt grunt; not having much actual sound, but rather arising from the sudden expulsion of air: the only noise I know at all like it, is the low hoarse bark of a large dog. Having visited the four from almost within arm's length (and they me) for several minutes, they rushed into the water at full gallop, with the greatest impetuosity, and emitted, at the same time, their bark. After diving a short distance they came again to the surface, but only just showed the upper part of their heads. When the female is swimming in the water and has young ones, they are said to sit on her back.—*Darwin's Journal.*

CARABIDÆ. A very numerous family of Coleopterous insects, containing some of the largest of the carnivorous beetles; many of which are adorned with brilliant metallic tints. The body of these insects is of a square form; whereby they are very free from resistance, whereby they are enabled to creep about under stones, &c., as well as prevented from falling beneath the pores of the insects they attack; most of the species of this family being eminently nocturnous; prowling about, in search of their prey, on the surface of the ground, under stones, &c., or beneath the bark of trees, or in the moss growing at their roots. They are accordingly of essential service in keeping down the numbers of noxious insects with which our gardens and pastures might otherwise be overrun. They are not all, however, exclusively carnivorous; since some of the species generally found in cornfields are clearly ascertained to feed upon growing grain. Some of the species among the larger Carabidæ exhale a fetid odour, discharging at the same time from the abdomen to a considerable distance a caustic and acrid fluid. Few observations have hitherto been made relative to the larvæ of this family; but those which have been noticed are equally voracious with the perfect insects, and are found in similar situations; they are generally long, with the body of equal breadth throughout. The large work of the Count Dejean is the most complete book yet published on this family. There have been, however, many additions to this family of insects, as to most others. There is a very large collection of them in the British Museum.

CARACARA. A South American Falconidous bird of the genus *Polyborus*. It is of the size of the common kite, and has a tail nine inches long. The beak is black, and hooked; the plumage tawny, with white and yellow specks; the feet are yellow, with semicircular, long, sharp, black talons. In its food the Caracara seems to be content with any animal substance: carrion, reptiles, toads, snails, birds, insects, &c.; whatever, in short, will suit the appetite of other ignoble birds of prey, will content the Caracara. It is by no means shy; and though it ventures to approach inhabited places, it is seldom attacked, as it rarely molests domestic poultry. It builds its nest on the tops of trees where the foliage is close, or in a bushy thicket. It lays two eggs, pointed at one end, and spotted with crimson on a reddish-brown ground.

CARCAJOU. [See BADGER.]

CARACAL. (*Felis caracal.*) This animal, called also the Persian Lynx, is a native both of Asia and Africa. It is about the size of a fox; possesses great strength and fierceness; and is used not only in the chase of the smaller quadrupeds, but of the

CARACAL.—(FELIS CARACAL.)

larger kinds of birds, such as herons, cranes, pelicans, &c., which it is said to surprise with great address. When it has seized its prey, it lies motionless for some time upon it, holding it in its mouth. Its colour is a pale reddish-brown, whitish beneath: the head is small, the face rather long, the ears sharp and slender, of a dark colour, and terminated by a tuft or pencil of long black hairs.

CARCHARIAS. A genus of Chondropterygious fishes, notorious for their bold and predaceous habits, and distinguished by their trenchant-pointed teeth. [See SHARK.]

CARDIACEÆ. A family of Molluscous animals, including the Cockles and their allies; the shells of which are all equivalve, or nearly so. They are furnished with a regularly-toothed hinge, often of great complexity and beauty; and there is always a double abductor muscle: the respiratory orifices are usually prolonged into tubes, which can, however, be drawn within the shell by means of a retractor muscle. There are numerous species, widely diffused; many of them being remarkable for the smallness and delicacy of their shells, as well as for the comparative activity of the animals that form and inhabit them.

CARDIUM. A genus of Mollusca belonging to the *Cardiacæ*. The foot is largely developed, and is a most important organ to the animals, it being used by most of them not merely for progression, but in the excavation of hollows in the sand or mud of the shores on which they dwell. As usually seen, the foot of the Cardium, or Cockle, when extended, tapers gradually to a point; and as its diameter is at its largest point much less than the breadth of the shell, it is not apparent by what means

CARDIUM PISIDIA.

the hole that is excavated is made sufficiently large for the reception of the latter: this, however, is accomplished by the distension of the foot with water, through a tube which opens just within the mouth; and thus the size of the borer becomes so nearly equal to that of the shell, that it is enabled, by rotatory motions often repeated, to excavate a burrow large enough to receive the animal with its shell. The shell is generally white, with sometimes a bluish or yellowish cast; it has twenty-six longitudinal ridges, is transversely wrinkled, and has somewhat imbricated striæ. The Cockles, with few exceptions, inhabit the ocean only: they abound most on sandy shores; and are used as a wholesome and nourishing food. The most common species is the Edible Cockle (*Cardium edule*).

Cardium Bechei. This beautiful species (which is a native of the Eastern seas) is dedicated to Sir Henry de la Beche, by its discoverer, Sir E. Belcher, and is described in the "Proceedings of the Zoological Society" (March, 1847), as without exception the most striking and distinct from any hitherto known that can well be imagined. In colour it is of a pure rose tint, with the following singular contrast of character. The middle and anterior portion of the shell is smooth, presenting a peculiar soft velvety appearance, the effect of its being minutely decussated with concentric and radiating striæ, and covered with an exquisite th shining horny epidermis, disposed in fi concentric cords, abruptly terminating the posterior area. The posterior portio accordingly destitute of epidermis, is ver thickly rayed with ribs of short compressed spines, as if the delicately clad surface o the shell had been thus far ploughed up, as it were, into furrows.

CARDINAL-BIRD. [See GROSBEAK.]

CARDUELIS. A genus of Passerine birds, of the Finch tribe. [See FRINGILLIDÆ; GOLDFINCH.]

CARIAMA. A Grallatorial bird, of the genus DICHOLOPHUS, the species being *D. cristatus*, —of the size of a heron, inhabiting the great mountain plains of Brazil, "where its sonorous voice often breaks the silence of the desert." Its retired habits are well described by Mr. Broderip; "A tenant of the vast solitudes that form its wide-spreading home, it flies from the face of man; and being almost always on the watch, is very difficult of approach. Stalking slowly on the plain, its eye instantly notes the distant intruder, and, after a moment's hesitation, it decides either to stay or fly, according to the circumstances. Those who have had the best opportunities of observing them in their native wilds, state that the hunters, though surrounded by these birds, cannot, without considerable labour, obtain them. As soon as the bird perceives that it is pursued, it sets off with great rapidity; the pursuer follows on horseback, but it is not till after a sharp and tedious course, with all its turnings and windings, that the Cariama, wearied out, either crouches on the ground, or alights on some bush or tree. Till this happens, the horseman in vain seeks for an opportunity to throw his lasso or pull his trigger. But," adds the writer, "wild as the bird is in its natural state, it is easily domesticated, and will live sociably with the other tenants of the poultry-yard." The Cariama is about two feet eight inches in length; it has an ornamental tuft on the head; the neck covered with long, loose feathers, like those of the bittern; legs long; feet long and slender; and tail rounded. The plumage on the upper part of the bird is brown, and the under parts whitish; the neck feathers are finely rayed with zig-zags of darker brown than the general colour; the wings are dark, traversed with white bands and dotted; the tail feathers are blackish, with white extremities; and the plumage on the front of the neck is prettily variegated with white and brown. The bill is of a bright coral red; and the legs and feet are of an orange red. It feeds chiefly upon lizards and insects. The anatomical structure of the Cariama is interesting to zoologists, on account of the relation it bears both to the waders and gallinaceous birds.

CARINARIA. A genus of Gasteropodous Mollusca, with an elongated, subcylindrical, transparent body, furnished with a sort of fin which performs the part of a rudder. The shells of this genus were formerly known

...ollusion under the name of "Venus's ...gue" and "Glass Nautilus." A species ...und in the Mediterranean, where it is ...to feed on small jelly-fish (*Medusæ*), ...ous other fish, as, for instance, the dwarf ...ter (*Blennius ocnops*.)

CARNARIA. An immense assemblage ...ticulated quadrupeds, belonging to ...filid weir of Mammalia, and which ...ow in common with Man and the ...ainmals, the three sorts of teeth, but ...d opposable thumb to the fore-feet.

CARNIVORA. The term applied to the ...h order of Quadrupeds, or Beasts of Prey; ...ich is the structure of their teeth and ...estive apparatus, and in their general ...anization, show that they are peculiarly ...apted for destroying living animals, and ...r being fed devouring flesh. In the ...ost marked of the members of this order, ...e of the canine teeth is the most ob...ous mark of distinction; these are large, ...ong, and pointed, and project somewhat ...ove the rest, so as to present themselves rather ...like to the line of the other teeth. Be...ween the canines of the two sides are six ...ther teeth in each jaw, which are provided

SKULL OF THE LION.

...with sharp cutting edges. The molar teeth, ...placed behind the canines, are of three ...kinds—four which immediately follow ...the canines, being more or less pointed, ...the two molars; the next being ...and termed false molars; the next being ...especially adapted for dividing and lacera...ting animal matter, by the sharp edge of its ...crown, and termed carnivorous teeth; and ...the last, or hindmost, being more or less ...tuberculated or tuberculated. The proportion ...which these different classes of molar teeth ...bear to each other in degree and develop...ment, stands with the relative carnivorous ...nature, or the different families; for in...stance, it may be laid down as a general ...rule, that those carnivorous animals which ...have the shortest jaw and the least developed ...teeth of the false molars are those in which ...the sanguinary propensity and the destruc...tive power co-exist in the highest degree. ...It should also be remembered that the arti...culation of the jaw does not permit of hori...zontal movement, the power being simply ...that of opening and shutting, like a pair of ...shears. In these, as indeed in all animals, ...the structure is admirably adapted to their ...habits. They feed on living animals and ...birds. They feed on living animals and ...are therefore swift, to pursue, and strong to ...overpower them; they are armed with for...midable teeth and claws to tear them in ...pieces; their sight is keen, and even more so ...their sense of smell; their sight is keen, and even more so ...by night than by day; their sense of smell ...is acute, and their power of hearing delicate; their feet are soft, to enable them to tread silently on their prey; their bodies are long and flexible, so that they may glide smoothly, and, finally, their supply of food being uncertain, they are capable of long abstinence.

In every order there is one principal group, which possesses the characteristics of the order in the highest perfection; though the necessary imperfection of all artificial systems of arrangement causes animals to be grouped together, which, although agreeing in very many points, yet differ essentially in others. Thus Lions and Tigers are the principal or typical group of Carnivora, yet in the order are included Bears, Racoons, &c., which feed principally on vegetables. The Carnivora are divided into—1. The *Plantigrades*, or those which walk on the entire soles of their feet; 2. *Digitigrades*, or those which walk on their toes; 3. *Amphibious Carnivora*. The *Plantigrades* comprise Bears, Badgers, Racoons, Gluttons, and Coatimundis. The structure of their feet causes these animals to be slow; but as their food is principally vegetable, speed is not required. The same structure gives them great facility in raising themselves on their hind feet. The *Digitigrades* comprise Lions, Tigers, Cats, Dogs, &c. This structure gives swiftness. This division is also characterised by the claws being retractile; thus preserving them from injury, and keeping them sharp for use when required. The *Amphibia*, or *Amphibious Carnivora*, comprise the Seals and Sea-horses, distinguished by having very short hind legs, and the fore legs formed for swimming.

As we shall have occasion to recur to this subject in describing various animals whose propensities are decidedly carnivorous, though differing in the degree, we shall for the present merely add, that the muscular energy of the Carnivora is very great; their respiration and circulation very active; and the demand for food, as a natural consequence, very constant.

CARP. (*Cyprinus carpio.*) The genus of Malacopterygious abdominal fish, of which this species is the best known, may be easily distinguishable by the small mouth, toothless jaws, and gills of three flat rays. The tongue and palate are smooth, but the gullet is admirably constructed for mastication, having large teeth attached to the inferior pharyngeal bones, which press the food between themselves and a gelatinous knob, connected with a bony plate that is united with the first vertebræ, commonly called the carp's tongue. They have but one dorsal fin, and the body is covered with scales, generally of a large size. They frequent fresh and quiet waters, feeding on herbs, grain, and even mud, being, perhaps, the least carnivorous of the finny race. The most noted are the Common Carp, and the Golden Carp or Gold-fish (*Cyprinus auratus*).

The Common Carp (*Cyprinus carpio*) is found in most of the lakes and smaller rivers of Europe; but those of the southern and temperate parts are most congenial to it, and it is said to decrease in size the farther it is removed to a northern region. It is generally

supposed that Carp were introduced into this country about the year 1500; but this is a fact of very little real importance, since they have long become denizens of most of our fish ponds and many of our rivers. They frequent the deepest places, and thrive best in such as have clayey or marly sides, and

CARP.—(CYPRINUS CARPIO.)

are well provided with aquatic vegetables: Their usual food consists of worms and other insects: but grain of various sorts, and garbage, are frequently thrown into the pond, with a view to aid in fattening them. The Carp is an extremely prolific fish, and the quantity of roe is so great that it is said to have sometimes exceeded the weight of the emptied fish itself when weighed against it.

The age to which the Carp arrives is very great, and several well authenticated instances are adduced of their arriving at that of considerably more than a century: some writers, indeed, affirm that they have been known to live to the age of two hundred years! The usual length of Carp in this country is from about twelve to sixteen inches; but in warmer climates they are frequently more than three feet long, and weigh twenty or thirty pounds. The general colour is a yellowish olive, much deeper or browner on the back, and the sides slightly tinged with a golden hue: the scales large, round, and very distinct; the head large, and the mouth furnished with a moderately long cirrus or beard: above which is a shorter one. The fins are violet brown, except the anal, which has a reddish tinge: the dorsal fin is broad or continued to some distance from the middle of the back towards the tail, which is slightly forked, with rounded lobes.

CARPENTER BEE. (*Xylocopa*). The name given to a very large genus of Hymenopterous insects; not one species of which has yet been found in the British Islands. They are generally of a very dark violet blue, and of considerable size. As an exemplification of this peculiar exotic genus, we may mention the Violet Carpenter Bee (*X. violacea*), a very common insect about Paris. Their bodies are of a very deep blue colour, smooth, and shining; their fore-wings are of a deep violet colour: on their sides, the hinder part of their bodies, and their breasts, there are long black hairs. As we have mentioned, they are not indigenous in this country; but in France and the southern parts of Europe there is scarcely a garden where some of them may not be found at different seasons of the year. They *generally form their nests* in pieces of half-rotten *wood; and the holes are* not made directly forward, but inclining to one side, and having apertures large enough to admit a finger; from which run their inner apartments, each generally twelve or fifteen inches long, and diverging into others. In each of these cells they deposit ten or twelve eggs, which are covered with a sort of paste, serving for the protection of the young insects, as well as for their nourishment. The females perform all the labour; and the males have no stings. In the British Museum cases may be seen specimens of wood bored by a North American species, or, we should rather say, with holes made by their powerful jaws. [See APIDÆ: BEE.]

CARPET [MOTHS]. A name applied by insect collectors to various species of Moths, of the genera *Harpalyce*, *Cidaria*, *Larentia*, *Cleoria*, and *Alcis*.

CARPINCHO. The Capybara, or Water-hog. From the dung of this, the *Myrapetra scutellaris*, a species of wasp found near Buenos Ayres, constructs its pasteboard nest. [See CAPYBARA.]

CARRIER PIGEON. [See PIGEON.]

CARYOPHYLLÆA. A genus of Zoophytes, belonging to the *Madreporiformes*, or the first section of the stony *Zoantharia* of De Blainville. The cells in this genus of Zoophytes are furnished with radiating

CARYOPHYLLÆA.

plates, striated externally, and collected into a solid conical polyparium fixed at the base. In the British Museum are many very fine specimens of this genus, which is found both in a recent and fossil state.

CASHMIRE GOAT. [See GOAT.]

CASSIS. A genus of Molluscous animals inhabiting an oblong shell: found in the seas of warmer climates. [See HELMET SHELL.] The well-known large species of this genus are used as ornaments on chimney pieces, grottos, &c., and are remarkable for the triangular disc, presented by the inner lip, which is thickened and spread over the body whorl, and the angulated outer lip; and as this thickening of the lip takes place at various stages of growth, the same triangular plane is observable at different parts of the spire.

CASSIDA. A genus of Coleopterous insects, of the family *Cassididæ*, or Tortoise-Beetles. They have a flattened body, surrounded by a margin, which is formed by a

GOLDEN TORTOISE.

prolongation from the thorax and elytra, and which even conceals the head; and they are able to lie so close upon the surface of the leaves, that no part of the body or limbs can be seen. Their colours are much varied, and often very prettily arranged in spots, points, rays, &c. The family is very numerous in genera and species, and among the exotic species are several of great beauty; but when dead, or taken out of spirits of wine in which they may have been preserved, their metallic brilliancy for the most part disappears.

The Common green Cassida, or *Cassida viridis*, is often seen during the summer months in gardens on the leaves of mint, &c. Its length is not quite a quarter of an inch; its shape oval, and its colour bright green above, the body or under part being perfectly black. The larva, which is of a highly singular appearance, is oval, of a yellowish brown colour, and has the body edged with a row or fringe of projecting fibres, the two terminal ones being much larger than the rest, and generally carried in a upright position while the insect is in motion. When ready to assume the chrysalid form, it fastens itself to a leaf, and, casting its skin, commences its new state of existence; and from the chrysalis, in the space of three weeks, comes forth the perfect insect.

CASSOWARY. (*Casuarius.*) This large and powerful Struthionidous bird is a native of Java and the adjacent islands of the Indian Archipelago, and is called the *galeated* or *helmeted* Cassowary, from its head being surmounted by a sort of osseous crest or horny helmet. The skin of the head and upper part of the neck are naked, of a deep-blue and fiery-red tint, with pendent caruncles, similar to those

CASSOWARY.—(CASUARIUS GALEATUS.)

of the Turkey-cock. It is much inferior in size to the Ostrich, its height when erect being little more than five feet; but it is admirably built, and very strong. From the form of its head, and bright eyes, it would be reasonable to infer that the Cassowary was of a fierce and threatening nature; this, however, is not a true indication of its character, which is rather timorous and shy. The shortness of the wings totally unfits it for flying, and its pectoral or wing-muscles are comparatively slight and weak. All the feathers of the Cassowary are of the same kind, being entirely designed for covering, and externally are all of one colour. They generally grow double, having two long shafts growing out of a short one attached to the skin; yet its whole plumage is so poorly supplied with feathers as to resemble, at a little distance, a coat of coarse or hanging hair. The feathers on the head and neck are so short and scattered, that the skin appears naked, except towards the hind part of the head, where they are somewhat longer.

In many important points of internal structure the Cassowary differs from the Ostrich; particularly in the conformation of its digestive organs. The intestines are short, and the *cæcum* small; there is no stomach intermediate to the crop and gizzard, and the *cloaca* is not larger, in proportion, than that of other birds. It feeds on fruits, eggs of birds, and tender herbage, but not on grain. It eats its food with great voracity, and, like the ostrich, swallows bits of iron, brick, glass, &c., which have the same effect in assisting the digestion of these large birds, that gravel has with ordinary fowls. The Cassowary is an amazingly swift runner; and its mode of progression, being unaided by wings, is as peculiar as it is efficient. It appears to strike out powerfully with one leg, so as to project its body violently forward with a bounding motion, far surpassing the speed of a horse. It also kicks violently when, in a state of captivity, it is provoked to anger, and can inflict a very severe blow. The eggs of the galeated Cassowary are of a greyish-ash colour, verging to green, and are neither as round nor as large as those of the Ostrich: the shell is not very thick, and is marked by numerous little green tubercles.

CASTOR. [See Beaver.]

CASUARIUS. [See Cassowary.]

CAT. (*Felis.*) All animals of the Cat kind, though they may differ greatly in size and colour, are in their wild state equally characterized by fierceness, artfulness, and rapacity. It is not, however, in this place that the habits, propensities, or anatomical structure of the feline race generally are to be discussed: the reader must refer to the article Felis for such remarks on those heads as we have deemed it essential to introduce.

The Cat, (*Felis catus ferus*), in a state of natural wildness differs in some slight particulars from the domestic animal, having a somewhat shorter tail in proportion, a flatter and larger head, and stronger limbs. The colour of the wild Cat is commonly a pale *yellowish-grey, with dusky* stripes; those on the back running lengthwise, those on the sides transversely and with a curved di-

rection: the tail is annulated with several alternate circles of blackish-brown and dull white; and the tip of the nose and the lips are black; they are, however, not uniformly alike in every particular. The manners of the wild Cat resemble those of the lynx, and several others of this genus; living in woods, and preying on young hares, birds, and a variety of other animals, which it seizes by surprise. "The wild Cat," says Mr. Pennant, "may be called the British tiger; it is the fiercest and most destructive beast we have; making dreadful havoc amongst our poultry, lambs, and kids. It inhabits the most mountainous and woody parts of these islands, living mostly in trees, and feeding only by night. It multiplies as fast as our common Cats; and often the females of the latter will quit their domestic mates, and return home pregnant by the former."

The varieties of this animal in a domestic state are very numerous: it is either entirely black; black and white; black, fulvous, and white (called the Tortoise-shell or Spanish Cat); entirely white; fulvous and white; dun colour or tawny, either plain or striped; tabby, boldly striped; slate-coloured or blue-grey (called the Chartreux Cat); slate-coloured with very long fur, especially on the neck and tail (the Persian Cat); long hair of silvery whiteness and silky texture (called the Angora Cat); and, lastly, with pencilled or tufted ears, like a lynx, which sometimes though rarely, takes place. Of all the above varieties, the Persian and the Angora are the most remarkable.

Although the Cat is capable of showing considerable fondness for an individual, it seems to be a pretty general opinion that she seldom, if ever, confides fully, even in the warmest demonstrations of kindness; but, being highly sensitive and fond of ease, evinces little anxiety, except for the continuance of her enjoyment. Yet, with all the prejudice that exists against the fortiveness and treachery of the species, no one can deny that, when well educated, the Cat possesses qualities which well entitle her to the regard and protection of mankind; and if she does not exhibit the vivid and animated attachment of the dog, she is still of an affectionate and gentle disposition, and grateful to her benefactors. Nor does any animal, whose habits we have the opportunity of accurately observing, exhibit a greater degree of maternal tenderness; the extreme assiduity with which she attends her young, and the fondness which she shows for them, never fail to attract attention.

At what period Cats became inmates of human habitations, it is scarcely possible, at this period, to determine. Beyond doubt, their usefulness in destroying rats, mice, &c. first introduced them to notice; and there is good reason to believe that they were originally domesticated in Egypt. That Cats, closely allied to the domestic variety, were trained to catch birds, is well known to every one who has seen an Egyptian painting (or a copy from it) in the British Museum, where a cat with a black stripe on the heels (supposed to be the *Felis caligata*) is so represented. *The Cat belongs to a genus better armed for* the destruction of animal life than all other quadrupeds. The short and powerful jaws, moved by vigorous muscles, are supplied with most formidable trenchant teeth; a cunning disposition, combined with nocturnal habits and much patience in pursuit, gives them great advantages over their prey; and their keen, lacerating claws enable them to inflict a certain death-blow. All animals considerably weaker than themselves prove objects of pursuit: but the mouse is their favourite game; for which they will patiently wait for a whole day till the victim comes within reach, when they seize it with a bound, and after playing with it put it to death.

The pupil of the eye in most animals is capable of but a small degree of contraction and dilatation; it enlarges a little in the dark, and contracts when the light pours upon it too profusely; but in the eyes of Cats, this contraction and dilatation is so considerable, that the pupil, which by day appears narrow and small, by night expands over the whole surface of the eye-ball, and gives the eyes a luminous appearance. By means of this peculiar structure, their eyes are better adapted for vision at night than in the day-time; and they are thus fitted for discovering and surprising their prey.

Cats are extremely fond of strong-smelling plants, and will roll in valerian till they seem almost mad with excitement. Personally, it is a very cleanly animal, avoiding to step in any sort of filth, concealing its excrement in the earth with great care, and preserving its fur in a very neat condition; which being generally clean and dry, readily yields electric sparks when rubbed. The Cat goes with young for sixty-three days, and brings forth from three to six at a litter, which remain blind for nine days.

CATASTOMUS. A sub-genus of Malacopterygious fishes, of the *Cyprinidæ* family, inhabiting the fresh waters of North America. There are many species, the generic description of which is as follows:—Back with a single fin: gill-membrane three-rayed: head and opercula smooth: jaws toothless and retractile: mouth beneath the snout; lips plaited, lobed, or caruncular, suitable for sucking: throat with pectinated teeth. In almost all the species, the scales are marked with radiated lines, and fimbriated on their edges; their form more or less rhomboidal or roundish. In the intestines, river-shells (*Lymnæi*, *Bulimus*, &c.), which dwell on aquatic plants and on rocks or bottoms of rivers, are found; the *Catastomi* being enabled to take these shells by means of their lips, which are protruded forwards by their jaws. One species will be sufficient for us to describe.

CATASTOMUS HUDSONIUS; or GREY SUCKING CARP. This is a common fish in all parts of the fur countries, abounding in the rivers, and even in land-locked marshes and ponds, but preferring shallow grassy lakes with muddy bottoms. In the beginning of summer it may be seen in numbers forcing its way up rocky streams, and even breasting strong rapids, to arrive at its proper spawning places in stony rivu-

twenty-one inches long; flattened laterally, with depth of the body ex- rather more than one- line runs equidistant from ly, straight till it comes al fin, when it inclines obtuse angle, and passes of the tail, giving that n slightly different from Scales for the most part nearly orbicular, and of a th retractile, placed under ded with large soft pa- no barbels. The pectoral the ventrals obovate; the y quadrangular; the anal its own length of the cau- turned backwards its tip of the caudal, which is . The back and sides of h-grey with considerable being darkest, and the tint ally passing into the pearl- y. Dorsal and caudal fins torals and ventrals ochre- with red; anal flesh-red. r best-known species are the Carp (*Catostomus Forsteria-* Sucking Carp (*Catostomus* the Black Sucking Carp, or *tostomus nigricans*).— These, preceding, are all described by rdson, the most distinguished of this country, in his Fauna ica, and the Supplements to Voyages.

D. (*Turdus* [*Mimus*] *felivox.*) ted American ornithologist, given an account of this bird in ssing, that we are tempted to entire before our readers. "In mmer," says he, "on approaching ranches, the first salutation you m the Cat-bird; and a stranger, ed with its note, would instantly at some vagrant orphan kitten

weeds, small twigs, and fine dry grass; the inside is lined with the fine black fibrous roots of some plant. The female lays four, sometimes five, eggs, of a uniform greenish blue colour, without any spots. They generally raise two, and sometimes three, broods in a season.

"In passing through the woods in summer, I have sometimes amused myself with imitating the violent chirping or squeaking of young birds, in order to observe what different species were around me,—for such sounds, at such a season, in the woods, are no less alarming to the feathered tenants of the bushes, than the cry of fire or murder in the streets is to the inhabitants of a large and populous city. On such occasions of alarm and consternation, the Cat-bird is the first to make his appearance, not singly, but sometimes half a dozen at a time, flying from different quarters to the spot. At this time, those who are disposed to play with his feelings may almost throw him into fits, his emotion and agitation are so great, at the distressful cries of what he supposes to be his suffering young. Other birds are variously affected, but none show symptoms of extreme suffering. He hurries backwards and forwards, with hanging wings and open mouth, calling out louder and faster, and actually screaming with distress, till he appears hoarse with his exertions. He attempts no offensive means; but he bewails —he implores—in the most pathetic terms with which nature has supplied him, and with an agony of feeling which is truly affecting. Every feathered neighbour within hearing hastens to the place, to learn the cause of the alarm, peeping about with looks of consternation and sympathy. But their own powerful parental duties and domestic concerns soon oblige each to withdraw. At any other season the most perfect imitations have no effect whatever on him.

"The Cat-bird is one of our earliest morning songsters, beginning generally before break of day, and hovering from bush to bush, with great sprightliness, when there

perceive considerable variety in his performance, in which he seems to introduce all the odd sounds and quaint passages he has been

CAT BIRD.—(TURDUS [MIMUS] FELIVOX.)

able to collect. Upon the whole, though we cannot arrange him with the grand leaders of our vernal choristers, he well merits a place among the most agreeable *general* performers. In summer, scarcely a thicket in the country is without its Cat-birds; and, were they to fly in flocks, like many other birds, they would darken the air with their numbers. In their migrations they keep pace with the progress of agriculture; and the first settlers in many parts of the Genesee country have told me, that it was several years after they removed there, before the Cat-bird made its appearance among them. With all these amiable qualities to recommend him, few people in the country respect the Cat-bird; on the contrary, it is generally the object of dislike; and the boys of the United States entertain the same prejudice and contempt for this bird, its nest and young, as those of Britain do for the Yellow-hammer, and its nest, eggs, and young. I am at a loss to account for this cruel prejudice. Even those by whom it is entertained can scarcely tell you why; only they 'hate Cat-birds;' as some persons tell you they hate Frenchmen, they hate Dutchmen, &c.; expressions that bespeak their own narrowness of understanding and want of liberality. Yet, after ruminating over in my own mind all the probable causes, I think I have at last hit on some of them; the principal of which seems to me to be a certain similarity of taste, and clashing of interest, between the Cat-bird and the farmer. The Cat-bird is fond of large ripe garden strawberries; so is the farmer, for the good price they bring at market: the Cat-bird loves the best and richest early cherries; so does the farmer, for they are sometimes the most profitable of his early fruit, &c. Perhaps, too, the common note of the Cat-bird, so like the mewing of the animal whose name it bears, and who itself sustains no small share of prejudice, the homeliness of his plumage, and even his familiarity, so proverbially known to beget contempt, may also contribute to this mean, illiberal, and persecuting prejudice; but, with the generous and the good, the lovers of nature and of rural charms, the confidence which this familiar bird places in man by building in his garden, under his eye, the music of his song, and the interesting playfulness of his *manners, will always* be more than a recompence for all the little

snatches.

"The Cat-bird measu
length; at a small di
nearly black; but, on a
is of deep slate colour alo
edges of the primaries, an
lighter slate colour below
tail-coverts, which are
tail, which is rounded, a
head, as well as the legs
The female differs little
male." The habits, ma
appearance of the Cat-b
from the Thrushes, tha
whom we are indebted fo
ticulars does not hesitate
genus *Turdus*. He is a gr
enemy to the common
horse-runner (*Coluber*
rifles its nest whenever an
As the Cat-bird uniformly
this snake, and is frequen
of hopping eagerly after
lous stories are related of
by the snake; it is, howe
naturalists that the bird i
the aggressor and victor,
to its hiding-place.

CATERPILLAR. The
larvæ of lepidopterous in
have spoken at some len
BUTTERFLY, and to wh
from "Brande's Dictiona
Lepidoptera), may be ad
six squamous or hooke
respond to the legs of the
from four to ten additi
ones, or *propedes;* the tw
situated at the posterior
body. Those Caterpillar
ten or twelve in all, have
their mode of progression,
of these geometers, whe
fixed to the branches of
feet alone, whence in the
directions of their body,
twig. The body of these
elongated, almost cylindri
coloured; sometimes nak
covered with hairs, tuberc
is composed of twelve se
exclusive of the head, wit
each side. Their head
corneous or squamous de
on each side six shining
appear to be ocelli: and
two very short and conic
mouth composed of stron
maxillæ, a labrum, and
Most Caterpillars feed on
some gnaw their flowers,
seeds; others attack the
parts of trees, softening it
which they disgorge. Ce
our woollens and furs,
much injury; even our le
and lard are not spared
confine themselves exclu
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devour all sorts of organi
of them form societies, a

m by them in sum-
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ade for themselves,
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ves of leaves, where
The greater number
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erfly or Moth usually
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nt kinds of butterflies
ave, on an average, three
terpillars; if one half of
rrived at maturity, are
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mond, and six thousand
fifty millions in the third
data suffice to show that
of these insects, existing
must be far beyond the
n.

[See TURKEY BUZZARD.]

collective term, denoting
bovine or ox kind. The
f Britain may be divided
se of large size, adapted for
se of smaller size, adapted
. Of each of these classes
breeds; such as the High-
ch cattle, among the latter;
shire, the Yorkshire, and
e cattle, among the former,
intermediate breed, adapted
ilky countries; such as the
ile breeds in Scotland, and
nd Guernsey cattle in Eng-
beef brought to the London
of cattle of the Highland
ilch pastures, or on turnips
ew for general purposes is
he best for cream and butter,
milk, the Lancashire. Hence
erally employed in public
shire by farmers and cot-
he Alderney by the higher

ertic.] This genus of *Rodentia*
a middle place between the
bbit tribes; they are natives
erica, and are distinguished
e-shaped fore-teeth and eight
e three to five toes on the fore-
he hind from four to five; tail
ry short, and sometimes a
ly a stump, and sometimes
ly; they live on vegetable sub-
in their natural state inhabit
ssian ground, or take shelter
s, or other recesses which they
ially purposed, or form for them-
most familiar example of this
well-known little animal, called
pig, or Cavia Cobaya.

The COMMON CAVY, or GUINEA-PIG. (*Cavia Cobaya.*) From the beauty and variety of its colours, and the neatness of its appearance, this species must have early attracted the attention of those Europeans who first visited South America; but it has

COMMON CAVY, OR GUINEA PIG.
(CAVIA COBAYA.)

been so long domesticated in this and other countries, as now to have become quite naturalized in the Old World. Its ears are large, broad, and rounded at the sides; its upper lip is half divided; and its hair is erect, somewhat resembling that of a young pig. Its colour is white, varied with orange and black in irregular blotches. It has four toes on the fore-legs, and three on the hind; and is destitute of a tail. In its wild state it lives in societies, inhabiting dry lands covered with low brushwood; and remains concealed during the day, coming forth on the approach of evening to seek its food. It possesses neither cunning to avoid danger, strength to resist, nor swiftness to escape from it; and nothing could save the race from extermination, were it not for its extraordinary rapidity of multiplication. The usual litter consists of six, eight, or ten; and so prolific is it that it breeds almost every two months. The young very soon acquire the necessary degree of strength and perfection of their species, though they continue to grow till seven or eight months. They are very tender animals, and susceptible of cold; and should therefore be provided with warm receptacles to retire into in bad weather. In their habits they are extremely neat, and may be frequently observed in the act of smoothing and dressing their fur. Their general voice is a sort of a grunting squeak, and sometimes a shriller or sharper cry.

The SPOTTED CAVY (*Cœlogenys paca*) is a large species, measuring nearly two feet in length. It is found in Guiana, Brazil, and other parts of South America; inhabiting holes formed underground, and principally near the banks of rivers. Its shape is thick and clumsy, somewhat like that of a pig, for which reason it has been sometimes called the hog-rabbit. It has five toes on each foot, and only the mere rudiment of a tail. The upper jaw is longer than the lower; the ears are short and naked; the lip is divided like that of a hare; and it has long whiskers. The body is covered with coarse, short, thinly-scattered hair of a dusky colour; the throat, breast, and belly are of a dingy white; and on each side the body run five rows of roundish, slightly angular spots. The Spotted Cavy is a nocturnal animal, residing in a solitary manner in his hole nearly the whole day. In a domestic state

it readily feeds on almost any kind of vegetable diet, and is particularly fond of sugar and fruits. By the South Americans it is much esteemed as an article of food. [See AGOUTI; CAPYBARA: PACA, &c.]

CEBIDÆ. A term used to include all the Monkeys of the American continent; which differ in several respects from those of the Old World; viz. by a partial or complete absence of the thumb upon the hands; the callosities and cheek-pouches are altogether absent; there is a very considerable space between the nostrils; the tail is usually of great length, never absent, and often prehensile. They are very numerous in those vast forests which occupy the plains between the rivers Oronoko and Amazon. [See MONKEY.]

CEBRIO; CEBRIONIDÆ. A genus and family of Coleopterous insects, of small extent, but comprising several striking peculiarities of structure. The body is of an oblong oval form, of a firm consistence like the Elateridæ, arched above and deflexed in front; the mandibles strong, curved, and entire at the tip; the thorax broadest behind, with the posterior angles acute; and the antennæ generally longer than the head and thorax, and serrated or pectinated in the males. These insects are of moderate size; and their colours generally dull and obscure: for the most part they are inhabitants of the south of Europe, and the north of Africa; and but little is known of their habits.

Some of the genera are most remarkable for their beautiful pectinated antennæ, which in the male sex have the branches often of

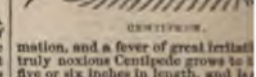
RHIPICERA MARGINATA.

very great length. By some authors these are regarded as a separate family, under the name of *Rhipiceridæ*. We figure a beautiful Brazilian species, which is of a blackish green, and pubescent: the anterior and lateral margins of the elytra are yellow: hence it is called *Rhipicera marginata*. The figure in outline represents the beautiful pectinated antenna of the male, considerably magnified.

CECIDOMYIA; CECIDOMYIDÆ. A genus and family of two-winged flies, of which there are many species. They are always of small size; many of them deposit their eggs upon the tender buds of various kinds of plants; others upon the young sprigs, and some upon the flowers. One species (*Cecidomyia salicina*) fixes each of its eggs on a bud of the willow, which enlarged, and ultimately forms which the larva is lodged and Another (*Cecidomyia tritici*), kno Wheat-fly, may sometimes be see abundance, flying about wheat fie month of June. This little fly d eggs in the centre of the corolla, larvæ are hatched; and it is pe devouring the pollen that they injurious to the plant. Anothe (*Cecidomyia destructor*), known in under the name of the Hessian-fl the lower part of the stem of ti Dr. Asa Fitch, an American natu just published a most admirable an account of the *Cecidomyia*, from shall make extracts in our article fly." [See WHEAT-FLY and HESS

CECILIANS. A name given t of naked serpents, from their blindness.

CENTIPEDE. (*Scolopendra.*) carnivorous *annulose* belonging to *Myriapoda* of Cuvier. They a guished by having antennæ of joints or upwards; a mouth compo mandibles; a quadrifid lip; two small feet, united at their base; an lip, formed by a second pair of di joined at their origin, and termin strong hook, having an opening t point, through which a poisonou thrown out. The body is long, and membranous, each ring bein by a coriaceous or cartilaginous mostly having one pair of feet; t usually thrown backwards, and in form of a tail. These insect themselves under the decayed bar the decayed timbers of building stones, lumber, and rubbish, wh sally forth at night in search of the West India Islands, and throu hot parts of America, where they rapidly and grow to a large size, very formidable pests. The uti lance is necessary, even in cleani to prevent these creatures from fin way into the beds; and although deavour to escape as soon as brought into the room, and run siderable swiftness, they are ready on the defensive, and bite severe are accordingly very dangerous they have entered a bed; the bite only exceedingly painful at the mo followed by a high degree of loca



CENTIPEDE.

mation, and a fever of great irritati truly noxious Centipede grows to five or six inches in length, and is able inmate of most of the houses i regions. In different countries th vary: the one common in Englan

colour, about an inch long, e body, and yellowish legs. ade it the type of his genus ord meaning that the Centi- der or amongst stones. One common in this country, it is pous.

ther species in the collection Museum, from which they by G. Newport, F.R.S., &c., he has published a most ad- graph of the *Scolopendridæ* s, in a recent volume of the sactions. From the numerous the British Museum, the stu- how rich our great national must be in this important nimal Kingdom.

US, or SEA-SNIPE. *Cen-* *x.*) A genus of Acanthopte- principally distinguished by

— (CENTRISCUS SCOLOPAX.)

long tubular snout; the body d inclining to an oblong oval elomen carinated; and the ed. [See TRUMPET-FISH.]

PHUS. A genus of Acanthop- s, the technical characters of lady elongate, covered with ; teeth small and numerous; ut teeth; one long dorsal fin.

TUS. A genus of Acanthop- es, family *Scomberidæ*; in es are free or unconnected by d all have ventral fins.

MUS. A genus of Acanthop- s; a well known species of d the Sea-pike (*Centropomus* and is common throughout s, where it forms a consider- consumption. The Sea-pike ghs as much as twenty-five ens of its body is elongate; ernish-brown above, and sil-

ISTES. A genus of Acan- fishes; one species of which, *nigricans*), the Black-perch is of a deep olive-green colour pink hue on the under parts; y remarkable for having the ished, the central and two jecting.

S. A genus of Scansorial HEASANT CUCKOO.]

PODA. A class of Molluscous acterized by the possession of ses (or *feet*) around the head; they are, however, not feet, but prolonged tentacula, or fleshy processes, which project forwards from the head, and more or less conceal the mouth. In the whole range of molluscous animals, the Cephalopods are the most highly organized; they present undoubted rudiments of an internal skeleton, and contain digestive, secretory, respiratory, and generative organs. The nervous system of the Cephalopods approaches that of the lower fishes in many particulars; and they are almost exclusively marine in their habits. The natural division of the class is into those Cephalopods which are naked, and those which are testaceous, (*i.e.* protected by an external shell.) Of the former, the common Cuttle-fish, and of the latter, the Nautilus, may be taken as examples.

CEPHUS. A genus of Hymenopterous insects. The *Cephus pygmæus*, which is common on flowers, particularly buttercups, is about one-third of an inch long; black, with two yellow fasciæ on the abdomen: and its larva is said to live in the stems of wheat.

CEPOLA. A genus of Acanthopterygious fishes, the bodies of which are much compressed and elongated. [See BAND-FISH.]

CERAMBYCIDÆ. A family of Coleopterous insects (*Longicornes*); the most distinguishing feature of which is the very great length of their antennæ. They are found in all parts of the globe, but they abound most in hot climates. They deposit their eggs in old and decaying trees, which the larvæ afterwards feed upon, and thereby assist in removing. The body of these insects is long and subdepressed, occasionally subconvex; the maxillary lobes are distinct and membranaceous; the femora often clavate; and the tarsi short. Mr. Westwood, to whose "Modern Classification of Insects" we are so much indebted, observes that they are "generally of an elegant form, and beautifully variegated in their colours: they are found in forests, hedges, or woods, sitting upon the trunks of trees, or more rarely upon flowers. Some of the exotic species are remarkable for having the antennæ and legs covered with thick pencils of hairs; others are distinguished by the emission of a fragrant odour, not unlike that of attar of roses, which is so powerful, that the insects may be discovered upon trees by passers by, in consequence of the scent diffused through the air, and which is retained for a considerable period after death. Hence the generic names *Callichroma* and *Aromia*, proposed for these insects by Latreille and Serville. The *Cerambyx moschatus*, Linn. (or Musk Beetle, as it is generally but improperly termed, the scent scarcely resembling that of this drug) is the only British species belonging to this scented group: it is more than an inch long, of a fine green colour, and is abundant upon willows in the neighbourhood of London." It has been conjectured that the fragrance, which is always much more powerful in the female, may be intended, like the light of the glowworm, as a guide for the males. The author just

quoted informs us, that the larva of *Cerambyx heros*, which is one of the largest European species, is considered by Latreille to have been the *Cossus* of the ancients, by whom it was esteemed a relishing treat.

CERAMBYX HEROS.

It resides in the oak, occasioning much injury to the timber, by boring large channels in all directions through the trunk of the tree: this is also the case, as regards young willows, with the Musk beetle; the larva of which is of a thick form and fleshy consistence; the head small; the prothorax large and transverse; the meso and metathorax very short, the former furnished with a pair of spiracles, and the three thoracic segments having three pairs of very short legs. He further says, "The larvæ of the genus *Callidium* are similar to those of *Aromia* (the Musk beetle) both in form and habits. The places where they reside may be known by the long cylindrical burrows which they form, and which are filled with excrement resembling powdered wood. It is not difficult to keep these larvæ alive in the wood in which they are found, and in which they assume the pupa state; it is very rarely, however, that they can be reared to the imago state. Mr. Kirby has given an interesting account of the proceedings of the larva of *Callidium violaceum*, which, in the larva state, feeds principally upon fir timber, upon which the bark has been suffered to remain after it has been felled; residing under the bark, mining its labyrinth-like passages in every direction, and occasioning much damage by means of its powerful jaws, which resemble a large, thick, and solid section of a cone of horn; the whole of their interior flattened surfaces applied together, so as completely to grind the food. It is described as being destitute of feet, pale, folded, somewhat hairy, convex above, and divided into thirteen segments, with the head large and convex. When full grown, it bores down obliquely into the solid wood to the depth of several inches, where it becomes a pupa."

The collection of these insects in the British Museum is very extensive: colour, and appendages make pleasing objects to the sight; Natural Theologian, the part the economy of nature is very easily demonstrable in many

CERASTES. A genus of in England the Horned Snake small protuberances on its fore animal, which partakes of the parous serpents, is remarkable total abstinence from water. Lybia, Arabia, &c.

CERBERUS. A sub-genus [See SERPENTS.]

CERCOPIDÆ. An extend Homoptera, comprising severa singular insects, many of which The head is of small or moder the face broad, the eyes lateral, inserted in the middle or lowe face; the promuscis short and t the prothorax very variable size, and in the sub-family *Cer* the portion of the body which remarkable forms above allud fore-wings differ in their co the majority have them stro forming cells closed before extremity of the wing. The hi in structure, being in some ne in others, furnished with a few and in many, being triangular gular, each angle throwing out The abdomen of the female is fu a multivalve ovipositor, variabl in the different species. Thes often beautifully varied in th they are constantly found amo and on trees, upon the juices of subsist, in all their states. On known insects in this family *phora spumaria*, which frequ plants, the larva and pupa inv selves with a frothy excrement tion. [See FROG-HOPPER.]

CERCOPITHECUS. [See Mo

CEREOPSIS. A genus of Pal that frequent the coasts in N The *Cereopsis Novæ Hollandiæ*

NEW HOLLAND CEREOPS
CEREOPSIS NOVÆ HOLLA

size of a common goose, and rese general appearance, with the exc length of the legs, which are f

to three feet. Its plumage is of a deeper on the upper than on the s. On the top of the head is a tail white; and the quill-feathers wings and tail are dusky black. extremity of the bill is black; the rounded cere, light straw colour; part of the legs, reddish orange; es, together with their web and k. It has a deep, hoarse, clang- its usual weight is from seven unds; and its flesh is considered It is now exceedingly common . In the Gardens of the Zoologi- we have been often struck with orial appearance possessed by this Australian Cere-faced Goose. Both and species were first described by es.

HIUM. A genus of Mollusca, habiting the Indian and Pacific There is a veil on the head of ch, two distant tentacula, having at the side, and a round, horny ss. The shell (which is often also a fossil state) has a turriculated oval aperture, and a short but anal curved to the left and back- There are very many species, most are in the collection of the British

HIA. [See Creeper.]

HIADÆ. A family of Tenuiros- slender-billed Passerine birds, com- thrown by the name of *Creepers*. birds which for the most part are to live upon the trunks and branches and to feed upon insects which infest . The form of the bill varies in species; being long and slender in part and stout, and capable of pene- very hard substances, in others. These ng by their feet to the perpendicular of trees, resting upon the stiff quills tails; and creep from the base to ith of the stem, with short jerking ots, searching every crevice as they Several species are described under d Creeper.

RA. A genus of Bombycidous of which there are several species; ne best known is the

RA VINULA, or PUSS MOTH. distinctly marked, and at the same mmon Moth, varies from two and a three and a half inches in the ex- of its wings, which are of a milky- pale sea colour; with a transverse black spots, near the base, succeeded other more cinereous-coloured bar, both sides with black spots. Then in the discoidal cell three curved ctures, which run in arches to the rgin of the wing. Beyond this are s of blackish, very strongly dentate several dark, wedge-like streaks g between the veins along the outer of the wing. The hind wings are ed more ashy in the female, with rgin spotted with dusky. Thorax ashy, spotted with black; abdomen white, with dusky marks. There are several varieties, in which the ground colour of the body and the markings of the wings are

Puss-moth.—(Cerura vinula.)

more or less intense. The Caterpillar is green, with a reddish head; the back dull lilac, separated from the green colour by an angulated white stripe. Its most striking peculiarity is the possession of two appendages, which, when the creature is disturbed, it pushes out sometimes to a considerable length. The Caterpillar, doubtless, in this way of expressing defiance, alarms some of its enemies; and any one not accustomed to

Caterpillar of Puss-moth.

insect-studies, would "look twice" before he ventured to touch what *would seem* a beautifully coloured and strange looking "grub," armed with two "weapons" of unknown powers. When full fed it encloses itself in a cocoon formed of chips of wood agglutinated together so firmly that it is difficult to cut it with a knife. It feeds on the willow, poplar, &c. in August, and the moth makes its appearance early in the following summer.

There are other British species of the genus, smaller in size, but more delicately marked; these are all figured in the very elegant British Moths and their transformations of Mr. Humphreys, the descriptions of which were compiled by Mr. Westwood.

CERVIDÆ. The Deer tribe; a group or family of Ruminantia, distinguished by the possession of bony deciduous horns, covered with soft skin, instead of with horny matter, and termed antlers. They are spread very extensively over the globe, each quarter having its own peculiar species, celebrated either for vigour, beauty, or speed, or for all these qualities combined.

CERVUS. [See Deer.]

CESTRACION. A genus of Sharks, found in New Holland; characterized by having

two kinds of teeth, arranged in oblique rows; those in front of the mouth being sharp, angular, and pointed; while those in the middle and back part of the jaw are flat and broad; the former evidently adapted for seizing the food, and the latter for crushing and bruising it. Specimens of the *Cestracion Phillipsii* may be seen, with most of the other formidable Fixed-gilled Chondropterygii to which it belongs, in the vast collection of the British Museum; while in the Museum of the College of Surgeons dissections and preparations of parts may be seen in great abundance.

CESTUM. A marine animal belonging to the *Acalepha ciliograda* and bearing a near resemblance to Beröe. It is a very long gelatinous ribbon, having one of the sides furnished with two rows of ciliæ; and near the sides of the mouth there are two vessels which are probably ovaries.

CETACEA. An order of Mammiferous animals, surpassing in size all others in existence, and inhabiting the sea. Like terrestrial quadrupeds, they are viviparous, suckle their young, have warm blood, and respire through lungs; for which purpose they must frequently come to the surface, to take in fresh supplies of air. But though in their anatomical details they are sufficiently distinguished from *fishes*, it will be seen that these animals have no hind limbs, that the first bones of their anterior extremities are shortened, and the succeeding ones flattened and enveloped in a tendinous membrane, which reduces them to the condition of true fins. The Cetacea are all carnivorous; but the largest species are supported chiefly by minute Mollusca and Medusæ.

J. E. Gray, F. R. S., and Keeper of the Zoological collections in the British Museum, has published, very recently, an elaborate monograph of all the Whales in the Zoology of the Voyage of H. M. SS. Erebus and Terror; and in the Proceedings of the Zoological Society of London for 1847, there are some additional observations and descriptions by this very eminent zoologist. [See WHALE.]

CETONIADÆ. An extensive group of Coleopterous insects, belonging to the family of Lamellicorn beetles, including several distinguished for their brilliant colours. Of these, as an example, the common ROSE CHAFER (*Cetonia aurata*) may be cited. This insect is nearly an inch long, of a shining green colour above, and coppery-red beneath, with white marks on the elytra. It abounds upon roses, and also upon the flowers of the privet. It flies well, with a considerable humming noise, during the hottest part of the day; and although it appears to give the preference to roses, it visits other flowers also, and draws from them their honeyed stores. In its larva state, the Rose-beetle feeds upon moist rotten wood, and is often met with under ground in ants' nests. After remaining about three years in its larva state, it makes a sort of cocoon of chips of wood, glued together by an excretion of its own; in this, as an inactive pupa, it passes the winter, and emerges in the followi summer in its perfect form. The inse composing the *Cetoniadæ* are very wid dispersed, but more especially frequent t pical climates.

ROSE CHAFER.—(CETONIA AURATA.)

Very few of the flower-beetles are cidedly injurious to vegetation. Some them are said to eat leaves; but the grea number live on the pollen and the honey flowers, or upon the sap that oozes from wounds of plants. In the infant or g state most of them eat only the crumb substance of decayed roots and stumps few live in the wounds of trees, and by th depredations prevent them from healing, accelerate the decay of the trunk.

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C. [TRICHOSTETHA] FASCICULARIS.

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kinds are day-fliers; those
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Some of them are of im-
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bes; such are the Incas of
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Harris has so well described
his family, that we have
t from his valuable work.
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il or the beginning of May,
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with a loud humming sound,
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two kinds of teeth, arranged in oblique rows; those in front of the mouth being sharp, angular, and pointed; while those in the middle and back part of the jaw are flat and broad; the former evidently adapted for seizing the food, and the latter for crushing and bruising it. Specimens of the *Cestracion Phillipsii* may be seen, with most of the other formidable Fixed-gilled Chondropterygii to which it belongs, in the vast collection of the British Museum; while in the Museum of the College of Surgeons dissections and preparations of parts may be seen in great abundance.

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C. [TRICHOCOELIA] FASCIOLARIS.

...al long tufts of yellow hair: the under ... of the body is also rather thickly clothed ... numerous scattered hairs of the same colour; while the *Cetonia* [*Pachnoda*] *Baxii*, from Senegal and the Gambia, with its harlequin markings, will serve as an illustration of another division of this very extensive family. Most of the bright-coloured kinds are day-fliers; those of dark and plain tints are generally nocturnal beetles. Some of them are of immense size, and have been styled the princes of the beetle tribes; such are the Incas of South America, and the Goliath Beetle (*Goliathus Goliatus*) of Guinea, the latter being more than four inches long, two inches broad, and thick and heavy in proportion. [See GOLIATH.]

C. [PACHNODA] BAXII.

Dr. Thaddeus Harris has so well described a species of this family, that we have made an extract from his valuable work, as follows:—"CETONIA INDA makes its appearance in the United States towards the end of April or the beginning of May, when it may sometimes be seen in considerable numbers around the borders of woods, and in dry open fields, flying just above the grass with a loud humming sound, like a humble-bee, for which, perhaps, it might at first sight be mistaken. Like other insects of the same genus, it has a broad body, very obtuse behind, with a triangular thorax, and a little wedge-shaped piece on each side between the hinder angles of the thorax and the shoulders of the wing-covers; the latter, taken together, form an oblong square, but are somewhat notched or widely scalloped on the middle of the outer edges. The head and thorax of this beetle are dark copper-brown, or almost black, and thickly covered with short greenish yellow hairs; the wing-cases are light yellowish brown; but changeable, with pearly metallic tints, and spattered with numerous irregular black spots; the under side of the body, which is very hairy, is of a black colour, with the edges of the rings and the legs dull red. It measures about six-tenths of an inch in length. During the summer months the Indian Cetonia is not seen; but about the middle of September a new brood comes forth, the beetles appearing fresh and bright, as though they had just completed their last transformation. At this time they may be found on the flowers of the golden-rod, eating the pollen, and also in great numbers on corn-stalks, and on the trunks of the locust tree, feeding upon the sweet sap of these plants. On the approach of cold weather they disappear, and it is conjectured that they get into some warm and sheltered spot, where they pass the winter in a torpid state, and in the spring issue from their retreats, and finish their career by depositing their eggs for another brood. Those that are seen in the spring want the freshness of the autumnal beetles. Their hovering over and occasionally dropping upon the surface of the ground is probably for the purpose of selecting a suitable place to enter the earth and lay their eggs.

Between four and five hundred distinct species are known to exist in collections, and numerous others are yearly added to the list. It is beyond the scope of our work to enter into a further description of the numerous genera and species of this group; but for some curiously formed species, see art. GOLIATHUS.

CHÆTODON: CHÆTODONTIDÆ. A genus and family of Acanthopterygious fishes, abounding in the seas of hot climates, and remarkable for the singularity of their figure and the beauty of their colours. They are, in a general view, distinguished by the great depth and highly compressed form of the body, which, in most species, is beautifully variegated by transverse, oblique, or longitudinal bands, and covered with strong scales; the dorsal and anal fins being remarkably broad. The species are very numerous; but they are rarely, if ever, found in the European seas. It may suffice, perhaps, to describe one species; for which purpose we will take

The IMPERIAL CHÆTODON. This is a magnificent species, growing to the length of twelve or fourteen inches: body oval; dorsal and anal fins broad; and scaled to a considerable distance from the base; gill-covers furnished on each side with a very strong spine; the ground colour a golden yellow, longitudinally but somewhat obliquely striped with very numerous bright-blue parallel rays. It is a native of the seas of Japan, and is in high esteem as an article of food.

CHAFFINCH. (*Fringilla cœlebs.*) A well-known, lively Passerine bird, of elegant plumage, whose short and frequently-repeated song is heard early in spring, but which towards the close of summer becomes a mere chirping note. Its nest is remarkably neat and compact, being constructed of small fibres, roots, and moss, and lined with wool, hair, and feathers. The female generally lays five or six eggs, slightly tinged with red, and sprinkled with dark spots, principally at the larger end; and the male is very assiduous in his attendance during the time of incubation. The bill is pale blue, tipped with black; eyes hazel; forehead black; the crown of the head, and the hinder part and sides of the neck, bluish ash; the cheeks, throat, and fore part of the neck, belly, thighs, and vent, white, slightly tinged with red; the back is reddish-brown, changing to green on the rump; the wing-coverts are dusky, tipped with white, forming two pretty large bars across the wing; the bastard wing and quill feathers are black, edged with yellow; the tail is black, except the outer feather, which is edged with white; legs brown. The plumage of the female is not so vivid, but inclines to a dusky green; and she is destitute of the red on the breast.

Chaffinches subsist chiefly on small seeds; likewise on caterpillars and insects, with which they also feed their young. As they are naturally very hardy, they may be taken

from their nests when about ten days old, and brought up with facility; but in England they are seldom kept in cages, as their song is thought to possess no variety, and they are not apt imitators of other song-birds. In Thuringia, however, it is said, there is quite a passion for keeping them, and they accordingly fetch high prices there.

Let us not suppose, however, that the Chaffinch is without a friendly advocate in this country. That he is esteemed by at least one person, and that person a naturalist of no mean calibre, the following extract from the Ornithological Essays of Mr. Waterton afford undoubted evidence:—"Amongst all the pretty warblers," says he, "which flit from bush to bush before me, as I wander through the flowery fields, next to poor cock robin, the chaffinch is my favourite bird. I see him almost at every step. He is in the fruit and forest trees, and in the lowly hawthorn; he is on the house-top, and on the ground close to your feet. You may observe him on the stack-bar, and on the dunghill; on the king's highway, in the fallow field, in the meadow, in the pasture, and by the margin of the stream. If his little pilferings on the beds of early radishes alarm you for the return of the kitchen garden, think, I pray you, how many thousands of seeds he consumes, which otherwise would be carried by the wind into your choicest quarters of cultivation, and would spring up there, most sadly to your cost. Think again of his continual services at your barn door, where he lives throughout the winter, chiefly on the unprofitable seeds, which would cause you endless trouble were they allowed to lie in the straw and to be carried out with it into the land, on the approach of spring.

"His nest is a paragon of perfection. He attaches lichen to the outside of it, by means of the spider's slender web. In the year 1805, when I was on a plantation in Guiana, I saw the humming-bird making use of the spider's web in its nidification; and then the thought struck me that our chaffinch might probably make use of it too. On my return to Europe, I watched a chaffinch busy at its nest: it left it, and flew to an old wall, took a cobweb from it, then conveyed it to its nest, and interwove it with the lichen on the outside of it. Four or five eggs are the usual number which the chaffinch's nest contains; and sometimes only three. The thorn, and most of the evergreen shrubs, the sprouts on the boles of forest trees, the woodbine, the whin, the wild rose, and occasionally the bramble, are this bird's favourite places for nidification. Like all its congeners, it never covers its eggs on retiring from the nest, for its young are hatched blind. There is something peculiarly pleasing to me in the song of this bird. Perhaps association of ideas may add a trifle to the value of its melody; for when I hear the first note of the chaffinch, I know that winter is on the eve of his departure, and that sunshine and fine weather are not far off. * * * The chaffinch never sings when on the wing; but it warbles incessantly on the trees, and on the hedge-rows, from the early part of February to the second week in July; and then (if the bird be in a state of freedom) its song entirely ceases. You may hear the thrush, the lark, the robin, and the wren, sing from time to time in the dreary months of winter; but you will never, by any chance, have one single note of melody from the chaffinch. Its powers of song have sunk into a deep and long lasting trance, not to be roused by any casualty whatever. All that remains of its voice, lately so sweet and so exhilarating, is the shrill and well-known monotonous call, which becomes remarkably distinct and frequent whenever the cat, the owl, the weasel, or the fox are seen to be on the move.

"Sad and mournful is the fate which awaits this harmless songster in Belgium and in Holland, and in other kingdoms of the Continent. In your visit to the towns in these countries, you see it outside the window, a lonely prisoner in a wooden cage, which is scarcely large enough to allow it to turn round upon its perch. It no longer enjoys the light of day. Its eyes have been seared with a red-hot iron, in order to increase its powers of song, which, unfortunately for the cause of humanity, are supposed to be heightened and prolonged far beyond their ordinary duration by this barbarous process. Poor chaffinches, poor choristers, poor little sufferers! My heart aches as I pass along the streets, and listen to your plaintive notes. At all hours of the day we may hear these helpless captives singing (as far as we can judge) in apparent ecstasy. I would fain hope that these pretty prisoners, so woe-begone, and so steeped in sorrow, to the eye of him who knows their sad story, may have no recollection of those days when they poured forth their wild notes in the woods, free as air, 'the happiest of the happy.' Did they remember the hour when the hand of man so cruelly deprived them both of liberty and eyesight, we should say that they would pine in anguish, and sink down at last, a certain prey to grief and melancholy. * * * How the song of birds is involved in mystery! mystery probably never to be explained. Whilst sauntering up and down the Continent in the blooming month of May, we hear the frequent warbling of the chaffinch; and then we fancy he is singing solely to beguile the incubation of his female, sitting on her nest in a bush close at hand. But on returning to the town, we notice another little chaffinch, often in some wretched alley, a prisoner with the loss of both its eyes, and singing nevertheless as though its little throat would burst. Does this blind captive pour fourth its melody in order to soothe its sorrows? Has Omnipotence kindly endowed the chaffinch with vocal faculties, which at one time may be employed to support it in distress, and at another time to add to its social enjoyments? What answer shall we make? We know not what to say. But be it as it will, I would not put out the eyes of the poor chaffinch, though by doing so I might render its melody ten times sweeter than that of the sweet nightingale itself. O that the potentate, in

...dominions this little bird is doomed ...h a cruel fate, would pass an edict to ...d the perpetration of the barbarous ...! Then would I exclaim, O king of ... thy act is worthy of a royal heart. ... kind Being, who is a friend to the ...dless, shall recompense thee for this."

...ALCIDÆ. A family of Lizards, long ...erpent-like in form, and gradually pre...ng us with a transition from one to the ...class of reptiles. The body is usually ...trical, and extremely elongated; some... destitute of limbs, and mostly with the ... only a little developed, or merely ru...ntary.

...descriptions of the species (eighteen in ...ar, and all in the British Museum), ...s very admirable descriptive catalogue ... Lizards in the Museum Collection, by ... Edw. Gray, Esq., F.R.S., published ...l, in 289 closely printed pages, wherein ...e species are well characterized.

...ALCIDIDÆ. A family of Hymenop...s insects, composed of a great number ...rasitic species, distinguished generally ...eir very minute size, and many of them ...ying splendid metallic colours. So ...dingly minute are some that they are ...d within the eggs of other insects, but ...majority infest other larvæ or pupæ. ... kinds of insect are subject to them, ...ey are mostly destructive to the vari...epidoptera; and there are some species, ...ally those having the ovipositor long ...serted, which deposit their eggs in va... kinds of galls, formed by *Cynipidæ*, &c.; ... progeny attacking and subsisting upon ...rvæ inclosed within.

... Halliday and Mr. F. Walker, F.L.S., ... studied this very extensive family of ...s. The latter has published a mono... of them; and there are many very ...tifully engraved plates, executed by ...agall, of the Bank of England, in the ...ntomological Magazine" and the "En...logist" of Mr. Newman. There is a ...ollection of them in the British Mu... Mr. Darwin brought home many ... the voyage of H. M. S. Beagle; Mr. ...mbinday found many new species ...g his travels in N. America; while, ... in high latitudes, Mr. George Barnston, ...f Tadoussac, found undescribed species ...se minute insects —

... green myriads in the peopled grass."

...AMA. A genus of large bivalve shells, ...aracters of which are, — that they are ...ly smooth, though in some places a ...rugose; and in a few species there are ...rous spines. The valves of the shell ...ual, elate, and convex; and the mouth ... as in the oyster. The *Chama gigas* ...ant Chama, is the largest and heaviest ... yet discovered. It is found in the ...n Ocean. "Many enormous cockles" ...ne gigas), Captain Flinders observes, ...e scattered upon different parts of the ... At low water, this cockle seems most ...ly to lie half open; but frequently ...with much noise; and the water within the shells then spouts up in a stream, three or four feet high: it was from this noise and the spouting of the water that we discovered them, for in other respects they were scarcely to be distinguished from the coral rock. A number of these cockles were taken on board the ship, and stewed in the coppers; but they were too rank to be agreeable food, and were eaten by few." It is also called *Tridacna*. We have seen an immense pair in the church of St. Sulpice in Paris, where they serve to hold "holy water."

CHAMELEON. A lizard-like Reptile, whose peculiar faculty of changing colour has for ages amused the uninformed, and furnished matter of speculation to the philosopher. The species included in the *Chameleonidæ*, or chameleon-tribe, are distinguished by several very remarkable peculiarities. Their bodies are much compressed, or flattened sideways; and the back is surmounted by a sharp ridge. Two of the toes

CHAMELEON.—(CHAMELEO AFRICANUS.)

are directed backwards, opposing the three anterior ones; and the tail is prehensile. The tongue is a hollow tube, with a swollen fleshy extremity; and it is capable of being darted out instantaneously to a great distance, and of being as rapidly drawn in. This organ is furnished with a glutinous saliva; by which the insect prey that serve for the support of these extraordinary reptiles are attached to it. The eyes of the Chameleon are capable of being moved independently of each other; and they are constantly covered with a sort of eyelid, in which there is a small aperture corresponding with the pupil. It is a creature of a harmless nature, feeding on insects, and is capable of enduring a long abstinence; hence arose the popular idea of the Chameleon being nourished by air alone. It is found in many parts of the world, and particularly in India and Africa: it is also sometimes seen in the warmer parts of Spain and Portugal.

The cause of the different changes of colour which the Chameleon undergoes is not even yet well understood. It is said that "the *rete muscosum*, or coloured layer of the skin, contains two kinds of pigment, situated in different layers; the deeper-seated layer is of a deep green or violet red colour, the superficial pigment is of a greyish colour; the deep-seated pigment is contained in branched cavities, and is moveable, producing by its partial accumulation and varying proportions with the superficial layer the changes of colour for which the Chameleon has in all ages been remarkable." Dr. Shaw thus writes: "The general or usual

changes of colour in the Chameleon, so far as I have been able to ascertain from my own observation of such as have been brought into this country in a living state, are from a bluish ash-colour (its natural tinge) to a green and sometimes yellowish colour, spotted unequally with red. If the animal be exposed to a full sunshine, the unilluminated side generally appears, within the space of some minutes, of a pale yellow, with large roundish patches or spots of red-brown. On reversing the situation of the animal the same change takes place in an opposite direction; the side which was before in the shade now becoming either brown or ash-colour, while the other side becomes yellow and red; but these changes are subject to much variety both as to intensity of colours and disposition of spots."

Chameleons are all exceedingly slow, dull, and torpid; often remaining in the same position for many hours together, or traversing the twigs and branches of trees in a slow and cautious manner, with the aid of the grasping powers of the feet and tail. The skin is composed of small granular scales; the lungs are large, and are connected (as in birds) with air-cells that lie among the muscles and beneath the skin; hence the appearance of the animal varies greatly; for, according as these cavities are full or empty, it appears either full and bloated, or lean and shrunken.

CHAMOIS. (*Antilope rupicapra*. Pallas. *Rupicapra tragus*. Gray.) A well-known species of the genus ANTELOPE (to which article we refer the reader); but it being the only animal of Western Europe that partakes in any very considerable degree of the characters belonging to the *Antilopidæ*, we have thought it desirable to describe it separately, under its popular name. The Chamois is found only in high mountainous regions, in small flocks or families, where they feed on the highest cliffs

CHAMOIS.—(ANTILOPE RUPICAPRA.)

and precipices affording vegetation, which are almost inaccessible to man. Their sight, hearing, and smell are so acute, and they are so exceedingly shy, that it is only by the greatest patience and skill that the hunter *can approach near enough* to shoot them; *they are likewise so swift*, and leap with such vigour and sureness of foo overtake them in a fair chase is ne possible; hence the Chamois hunt Alps are obliged to encounter th perils in pursuit of this favourite g

The Chamois is a little more th feet in length, and two feet in h head resembles that of the comm but the nostrils are not so large upper lip so prominent. The who covered with long hair, varying seasons, being of a deep brown in a brown fawn colour in summer, w ly mixed with grey in spring. Th of a pale yellow colour, excepting brown band, which commences nose, and ends at the base of the ears, after encircling the eyes; t short and black; and the edges o and inside of the thighs and ears als The horns are about six or seven in and are nearly parallel throughout is straight; the ears small, erect, an and there is neither muzzle nor be hoofs are concave beneath, and by a projecting edge, especially on side. The colours of both sexes same, but the females are rathe than the males. The kids are yellowish brown colour, having t jaw, both sides of the head, and t white; with similar dark bands ac beginning at the corners of the mo rounding the eye, and ending at head. One or two are usually pr a birth. Their flesh is considere superior article of food; and the wrought into a soft, pliable leath known by the name of the animal f it. Their food consists of mount and flowers, and the tender shoots and it is observed that they selde and are extremely fond of salt.— Earl of Derby has had several Ch his very noble menagerie at Knows saw two young species in London s ago, which were on their way to t ship's. They were very sweet, gentl creatures, and seemed to be by no m

CHANK SHELLS. The name one or more species of shells of *Dolium*. These shells (says Mr. M are fished up by divers in the Gulf on the coast opposite Jaffnapatam, in about two fathoms water; and vancore, Tuticoreen, and other plac fossil beds of Chanks have also be They are of a spiral shape, and fo siderable article of trade in Ind they are in extensive demand al country. They are sawn into ra or bracelets, and are worn as orna the arms, legs, fingers, &c. by th women; many of them are also to the bodies of opulent and distingu sons. Those which, from being t the fish, are called green Chanks, in demand. The white Chank wh shell thrown upon the beach by st having lost its gloss and consiste worth the freight up to Calcut value of the green Chank, depend

flank opening to the right, called a the right-handed Chank, is so ed, as sometimes to sell for 400, even 1000 rupees.

EL-BILL. (*Scythrops.*) A genus al birds found in New Holland, SWAINSON.]

DRIADÆ. A family of Wading Insessores, including the British 3 allied species. [See PLOVER.]

DRIUS. [See PLOVER.]

L. (*Salmo salvelinus.*) A fish belonging to the family *Salmonidæ*, which inhabits lakes of Scotland, Wales, and the England, as well as those of the more mountainous parts of Europe, having a strong predilection for clear

AFR.—(SALMO SALVELINUS.)

waters, and being seldom known into running streams, except ons are similar to those of its es. The body is longer and more an that of the trout; the back is colour, speckled with whitish belly is generally red; the scales small, and the lateral lines are The mouth is wide; the jaws are al; the lower parts of the fins are liner dye: and the gills are quadthough the Charr is very scarce untry, it occurs in many of the Cumberland, Westmoreland, and ; and its flesh is held in high es-

'ERERS. (*Ampelidæ.*) The Chatn family of Passerine birds (nearly en are natives of America), subfruits and berries; but as the of them reside far from the habiman, few opportunities occur of fully acquainted with their habits, ally species found in Europe is the Chatterer, or Waxwing (*Bombycilla*. [See WAXWING.]

'URPLE-BREASTED CHAT- (*Ampelis cotinga.*) Inhabits h is about nine inches in length; t; the head, all the upper parts of and wing-coverts of a splendid e; the greater coverts, wings, and ; the throat and fore part of the ple, varied with three or four bright scarlet; breast with a blue, times also a scarlet band. The ail the upper parts of the body of blue, and the throat, neck, and purple. This and an allied species alled *Pompadour Chatterers, from* e *introduced into Europe by the* extravagant, thoughtless, and ambitious mistress of Louis XV. A fine series of these birds may be seen in the noble collection of birds in the British Museum.

The RED CHATTERER (*Ampelis cornifex*) inhabits Guiana and many other parts of South America. The head is crested, and, with the lower part of the back and belly, rump, thighs, and vent, is of a bright crimson; the rest of the plumage is of a dull red, with the tips of the feathers dusky: the tail is crimson, with the tip black; the legs a dirty yellow. Its length is about seven inches.

CHEGOE, or CHIGOE. (*Pulex penetrans.*) A small and troublesome Apterous insect of the order Aphaniptera, of a black colour, which penetrates the flesh, and will, if neglected, produce malignant ulcers. It is a native of South America and the West India islands. It is, in fact, a very small flea, peculiar to warm climates, and dangerous as well as troublesome to those whom they attack. But our readers shall see what that entertaining naturalist, Waterton, has said upon the subject:—"This apparently insignificant insect far outdoes the bug in the exercise of its noxious qualities. The bug attacks you in an open manner, makes a hearty meal, and then retires to enjoy it: but the Chegoe commences its operations upon you so gently, that they are scarcely felt; and it terminates them in a way that calls for your most serious attention. In a word, it approaches you with such insinuating address, that you absolutely feel a kind of gratification at the very time it is adopting measures which will infallibly end in your certain torment. Soon after the Chegoe has entered your skin, you experience a pleasant itching kind of sensation, by which you begin to suspect that all is not right; and, on taking a nearer view of the part, you perceive that the skin is somewhat discoloured. I know it is supposed by some people, that the accounts concerning the Chegoe have been much exaggerated. I am not of this way of thinking, for I myself have smarted under its attacks; and I have minutely inspected the foot of a Negro, which was a mass of ulcers, formed entirely by the neglected ravages of the Chegoe.

"Not content with merely paying you a visit, and then taking itself off again, as is the custom of most insects, this insidious miner contrives to work its way quite under your skin, and there remains to rear a numerous progeny. I once had the curiosity to watch the movements of a Chegoe on the back of my hand, a part not usually selected by it to form a settlement. It worked its way pretty rapidly for so small an insect. In half an hour it had bored quite through the skin, and was completely out of sight. Not wishful to encourage its intended colony, 'Avast, there! my good little fellow,' said I; we must part company without loss of time. 'I cannot afford to keep you, and a numerous family, for nothing; you would *soon eat me out of house* and home.' On *saying this, I applied* the point of my penknife *to the place* where the Chegoe had

entered, and turned it loose upon the world again.

"In the plantations of Guiana there is generally an old negress, known by the name of Granny, a kind of 'Junonis anus,' who loiters about the negro yard, and is supposed to take charge of the little negroes who are too young to work. Towards the close of day, you will sometimes hear some of the most dismal cries of woe coming from that quarter. Old Granny is then at work, grubbing the Chegoe nests out of the feet of the sable urchins, and filling the holes with lime-juice and Cayenne pepper. This searching compound has two duties to perform; first, it causes death to any remaining Chegoe in the hole; and, secondly, it acts as a kind of birch-rod to the unruly brats, by which they are warned, to their cost, not to conceal their Chegoes in future: for, afraid of encountering old Granny's tomahawk, many of them prefer to let the Chegoes riot in their flesh, rather than come under her dissecting hand." In this strain our amusing "Wanderer" continues to recount the Chegoes' annoyances; but our want of space warns us to desist from indulging in a longer extract, and we conclude by observing, that, as these insects have a decided predilection for the toes, the most effectual way to prevent their attacks, is to wear thick stockings, and to bathe the feet often, particularly in sea-water.

CHEIROGALEUS. A genus of Mammalia belonging to the order *Quadrumana*, allied to the *Galagos*. They retain the whole of their inferior incisors during life; the head is round; the nose and muzzle are short; the lips are furnished with *vibrissæ;* the ears are short and oval; the eyes are

HAMPE'S LEMUR.—(CHEIROGALEUS MEDIUS.)

large, and close to each other; the toe-nails are compressed, somewhat clawlike; while the tail is long, bushy, and cylindrical. There are two or three species of these singular Mammalia known, all of which come from Madacascar. The species figured is called *Cheirogaleus medius.*

CHEIROMYS. [See Aye-Aye.]

CHEIROPTERA. The scientific name of an order of Mammalia, having the faculty of sustained flight; being characterized by having the anterior extremities so formed as to serve the office of wings, the fingers being extremely long, and connected together by an extended membrane. This power of continued flight, so contrary to the general habits of mammiferous animals, is *obtained by* the structure of the anterior *extremities*, the *fingers* of the fore-hand (or claw) being greatly lengthened; them is extended a thin membrane, continued from the anterior to the extremities, and, in most Bats, is a tinued between the hind legs, and it the tail where this member is prese food of most Bats is insects, which incessantly pursuing in their rapid in all of these the membrane is between the hind legs, which ena Bat to turn rapidly in pursuit of Some Bats, however, feed principally

SKELETON OF A BAT

and in these the hind legs are free all possess four large canine teeth, grinders vary in number, the smalle ber being on each side, three in ea and the largest five above and six b *vice versâ*. The incisors also va smallest number being two above below, and the largest number fou and six below. The order Cheirop tains only one division, the *Vesperi* The flying Foxes (*Galeopithecus*) be very properly classed among the mana. Bats, then, are divided families; the first of which, *Istiop* characterized by the peculiar stru the nose, the skin of which is expan leaf-like appendages, which are sup increase their power of smell; the family, *Anisthiphori*, have the nose The first family is divided into t families; the first, *Phyllostomatina*, the nose-leaf simple, and the second *taphina*, in which it is complicate second family is divided into th families; the first, *Vespertilionina*, h the wings are wide and extended, long, and there is only a single pha joint to the fore-finger; the second *lionina*, having the wings long and head short and obtuse, and there phalanges on the fore-finger; and t *Pteropina*, in which the wings are the head long, and having three ph on the fore-finger. There are s British species of Bats; two belon family *Rhinolophina*, the greater an Horse-shoe Bat; but neither of t very common. The remaining fi long to the family *Vespertilionina* being included in the genus *Vesper* largest of which is the *V. Noctula* or coloured Bat, the extent of the win fifteen inches; this species is ve The common Bat is the *Pipistr*

the "Common Bat" of the
. *Murinus*) was long supposed
common Bat;" but this is now
an error. Of the remaining
are the most beautiful found in
, the long-eared Bat, and the
ared Bat, belonging to the genus
the other is the *Barbastelle*.
VAMPIRE BAT.]

R. A genus of Arachnidæ,
the family called *Pseudo-scor-*
r bodies are oval, and they have
ngated like arms, with a claw-
ith two fingers; eight legs, all
terminated by two ungues.
de small scorpions deprived of
ody is flattened, with the thorax
e, and having one or two eyes
. They run quickly, and often
s crabs. Two or three species of
closely allied genus *Obisium* are
s country.

IA. An order of Reptiles, in-
Tortoises and Turtles; charac-
r body being inclosed between a
d or shell, from which the head,
ds are protruded. The animals
this order vary considerably in
s of their structure which adapt
rent habits of life; some of them
ed to reside exclusively upon the
d, and others to dwell amidst
e muddy banks of rivers, &c.
TORTOISES (*Testudinidæ*) have a
space, sustained by a bony ske-
y solid, and anchylosed for the
to the lateral edges of the breast-
r legs are truncated, with very
mmerted almost to the nails, and
, together with the head, of being
withdrawn into the armour. In
and RIVER TORTOISES (*Emydæ*)
e divided and webbed, so as to
e extent of surface; and in the
Chelonidæ) they are extended into
ided paddles, by which they can
selves rapidly through the water.
F.R.S., and Professor Bell have
monographs of this order. [See
and TURTLE.]

RA. The name applied to a ge-
ll Amphipodous Crustacea, first
Trieste by Dr. Philippi, who has
species which he calls *C. tere-*
s its habit of boring into wood-

CHELURA TEREBRANS

n water. This species, or a very
ed one, has been found at Ar-
Ayrshire, by Major Martin, and
Bay, Ireland, by Dr. Allman and
Mr. Thompson. It may prove nearly as destructive as the *Limnoria terebrans* (which see).

CHENALOPEX, or EGYPTIAN GOOSE. A genus of palmiped birds, allied to the Bernacle Geese, but distinguished by the length of its legs, and the small spur on the shoulder of the wing. The only known species (*Chenalopex Ægyptiaca*) is often figured on the

EGYPTIAN GOOSE.
(CHENALOPEX ÆGYPTIACA.)

Egyptian monuments: it is a very common bird in aviaries, where it proves very attractive by its pretty colouring, elegant form, and the ease with which it is kept in confinement. It is a native of the South of Europe, abounding in Sicily, for example; and in N. Africa it is an abundant species, especially in the Valley of the Nile.

CHERMES. A genus of four-winged insects, which, like those of the genus *Aphis*, are found on the leaves, young shoots, and bark of various trees and vegetables. They derive their particular distinctions from the plants or trees on which they feed; as the ash, alder, elm, box, willow, nettle, &c. The abdomen is pointed, and the legs are formed for leaping. In their larva state many of them appear coated, especially on the hind part of the body, with a flocculent or filamentous clammy substance, of a white colour, which exudes from their pores.

CHEUCAU. (*Pteroptochos rubecula.*) This curious bird frequents the most gloomy and retired spots within the damp forests of the islands forming the Chonos archipelago. Sometimes, although its cry may be heard close at hand, let a person watch ever so attentively, he will not see the Cheucau; at other times, let him stand motionless, and the red-breasted little bird will approach within a few feet, in the most familiar manner. It then busily hops about the entangled mass of rotting canes and branches, with its little tail cocked upwards. Mr. Darwin opened the gizzard of some specimens: it was very muscular, and contained hard seeds, buds of plants, and vegetable fibres, mixed with small stones. The Cheucau is held in superstitious fear by the Chilotans, on account

of its strange and varied cries.—*Darwin's Journal.* [See BARKING-BIRD.]

CHEVALIER. (*Totanus glottis.*) This Grallatorial bird, which is called by some naturalists the Greenshank, and by others the Green-legged Horseman, is about twelve inches in length, and stands very high on its legs. The bill is long, reddish near the tip, and black near the base; in summer the top of its head and nape are longitudinally rayed with deep black and white; the forehead, throat, fore part of the neck, breast, upper part of the belly and the sides are white, sprinkled with oval dusky spots; the rest of the under parts are pure white, except the under tail-coverts, which have the feathers spotted with black in the direction of the shafts: the greater wing-coverts, and the long feathers which protect the quills, are of a reddish grey, spotted with black; the rest of the coverts are edged with white, which is followed by a band of brown: the two intermediate tail-feathers are ash-coloured, with transverse brown zig-zag stripes. It frequents lakes, meadows, and the margins of rivers; and its flesh is very delicate and well-flavoured.

CHEVROTAIN. [See MUSK DEER.]

CHILOGNATHA. The first division of *Myriapoda*. The body is crustaceous, and often cylindrical, the antennæ rather thickened at the tips: two thick mandibles without palpi, distinctly divided into two portions; legs very short, and always terminated by a single claw. They crawl very slowly, or rather glide along, rolling themselves into a spire or ball. The first segment of the body, and in some also the second, is largest, and represents a corselet or small shield. It is only at the fourth, fifth, or sixth segment, in different species, that the duplication of the legs commences; and the two or three terminal segments are destitute of feet. On this family and the following, George Newport, F.R.S. has published valuable monographs in the Transactions of the Linnæan Society. [See IULUS and CENTIPEDE.]

CHILOPODA. A division of the class *Myriapoda*. They are characterized by antennæ thick at the base, and gradually growing slender towards the apex; the mouth consists of two mandibles, which are furnished with a palpiform process, and provided at the apex with numerous little denticulations; covering these is an upper and an under lip; above which are two palpi, resembling legs by being terminated by a pointed claw; and covering this under lip is an organ furnished with two lateral processes, each of which is terminated by a large bent claw, through the under part of which a poisonous liquid is said to be ejected. The body is somewhat flattened, composed of numerous segments, defended by plates of a horny substance, and each segment generally furnished with a pair of legs. In hot climates they grow very large, and, from their venomous bite, some of them are truly formidable. They conceal themselves under stones and fallen trees, and are all found in rotten wood. They are nocturnal in their habits, very active, and some emit a phosphoric light. [See SCOLOPENDRA; CENTIPEDE, &c.]

CHIMÆRA. There are two species of this very singular kind of Chondropterygious fish, the Northern and the Southern Chimæra; each named after the ocean in its habits.

NORTHERN CHIMÆRA.—(C. BOREALIS.)

The NORTHERN CHIMÆRA (*Chimæra Borealis*), generally abides in the deepest recesses of the sea, and is supposed to prey on the smaller fishes, as well as on the various sorts of Mollusca and Testacea. Its usual length is from three to four feet; the body is long, compressed, and gradually tapering towards the tail, which is continued into a long and slender filament: the head is very large and thick, rising up in front into a kind of pyramidal form; and at the top of the head, in the male fish, is a short upright process resembling a tuft. The mouth, placed beneath, is furnished in each jaw with a pair of broad, bony laminæ, notched in the margin into a resemblance of numerous teeth; while in front, both above and below, stand two large sub-triangular teeth; the upper lip is divided into five clefts; the front, from the mouth to the eyes, is marked by transverse undulations and pores; a line runs across the forehead, and is continued in a serpentine course into the lateral line, which is very strongly marked, of a whitish colour, with dark edges, and runs to the tip of the tail: the eyes are very large and bright, of a greenish colour, with silvery irides. The body above the lateral line is of a yellowish brown, and of a bright silver colour beneath it, variegated with numerous irregular spots. The fins are yellowish-brown, varied with darker shades: the first dorsal and the pectoral fins are large and subtriangular; the ventral, similarly shaped, are smaller; and at the base of each, in the males is a lengthened sub-cylindric process, roughened by numerous sharp prominences in a reverse direction. The flesh of the Chimæra is coarse, and unfit to be eaten.—The SOUTHERN CHIMÆRA (*Chimæra Australis*) is nearly of the size of the preceding species, but with the front sloping downwards, and the upper lip extended into a lengthened cartilaginous flap, bending downwards in a reversed direction beneath: general colour of the whole fish silvery, with a yellowish-brown cast on the upper parts: fins pale brown. Its manner of life is similar to that of the *Chimæra Borealis* in the Northern Hemisphere.

CHIMNEY SWEEPER [MOTHS]. A name given by collectors to Moths of the genus *Fumea*.

CHIMPANZEE. (*Pithecus troglodytes.*) Cuvier placed the Oran-Outang foremost in the rank of QUADRUMANA, but later natu-

relate consider that the Chimpanzee approximates more nearly in its general conformation to the human race. And yet how vile the difference! This animal is an in-

CHIMPANZEE.—(YOUNG MALE.)

habitant of Africa, and especially of the coasts of Congo and Angola; and travellers who have visited those countries assure us that in an adult state the Chimpanzees attain the stature of man, and live in society in the woods; that they construct huts of the leaves and branches of trees, to protect themselves against the extreme heat of the sun and the violence of the rains; that they walk upright, arm themselves with clubs, and make a formidable resistance against the attacks of the largest and most powerful beasts. The body of the Chimpanzee is covered with long black hair on the head, shoulders, and back, but much thinner on the breast and belly; the arms and legs are not so disproportionate as those of the Orang-Outang, the fore-fingers not quite touching the knees when the animal stands upright. The upper part of the head is very flat, with a retiring forehead, and a prominent bony ridge over the eyebrows; the mouth is wide, the ears large, the nose flat, and the face of a blackish brown colour. There is at present a female Chimpanzee in the Zoological Gardens, Regent's Park, supposed to be about ten years old: she is remarkably docile, and performs certain actions with much apparent rationality.

How truly has it been said, that although the gradations of Nature in the other parts of her works are minute and imperceptible, yet in the ascent from brutes to men the line is strongly drawn, well marked, and decisive! In vain the Chimpanzee or Orang-Outang may resemble Man in form, or may possess the power of imitating his actions, it still continues a wretched helpless creature; and whatever distant resemblance the internal conformation may bear to the human, its whole figure exhibits a picture sufficiently mortifying to those who pride themselves on personal appearances alone. The tongue and all the organs of voice may be the same, yet the animal is dumb; the brain may be formed in the same manner, yet the animal is destitute of reason: an evident proof, as Buffon beautifully observes, that no disposition of matter can constitute a mind; and that the body, how nicely soever constructed, is constructed in vain, when no *soul is to*-fused into it for the purpose of directing its operations.

Mr. Newman furnishes the readers of the "Zoologist" (1842) with the subjoined particulars: "A larger, stronger, and more active Chimpanzee than any previously imported, was lately consigned to Messrs. Coleman, Fischhart, and Co., from the river Nunez, near Sierra Leone. On its arrival in the London Docks I paid it a visit, and immediately communicated with Mr. Yarrell, with a view to obtaining it for the Zoological Society: the officials, however, were already on the alert, and the creature has since been purchased by the society for 200*l*. The following paragraph, which has been circulated in the London newspapers, was, I hear, penned by one of the keepers:—'It is singular that she resists every attempt to correct her, fighting with the utmost determination; every other animal, even the Ourang, fears its keeper. The first day of the Chimpanzee's arrival at the Gardens, she tore out three of the strong iron bars of her cage, which have been since strengthened. A temporary nail was driven about half its length, into a piece of wood, about six inches long and three and a half square; she held the wood between her teeth, and doubling the nail backwards and forwards, broke it short off. When in a passion, she tears her hair and rolls herself on the ground violently. Her table is supplied from her keeper's, and she shares in everything and anything in his. She eats her egg with a spoon, takes her grog daily, and, 'tis said, that when on board ship she mixed the latter herself. She will lock and unlock a door or drawer; will thread any needle; she cannot be taken in by the same thing twice, and will imitate almost anything that is done before her. She is considered by Professor Owen to be about nine years old, which well agrees with all accounts of her previous life. She weighs 52 lbs.; measures 2 feet 2 inches round the chest, and is 3 feet 2 inches high; or, as she will not stand upright to be measured, probably her height is nearly 3 feet 6 inches.' On making a more careful examination of this animal in her present abode, I was particularly struck by her want of teeth. Only one incisor and a few imperfect molars appear to remain. I observed her total inability to crack a nut, a feat performed by almost every other monkey with great adroitness. Her manners now are perfectly quiet, and there is no appearance of the ferocity implied in the preceding quotation; she was gentle in the extreme, shaking hands in a very cordial manner with some children who were present, and perfectly on the alert at the sound of her name—"Susan"—whenever it was uttered. I presume the keeper imagined that details of her ferocity would give her an interest in the eyes of the public. I have observed that the captains of Margate steamers always tell their passengers that the present is the roughest passage they ever encountered; so the visitors of this gentle being are assured it is the most savage Chimpanzee. The Captain, to whose care "Susan" was entrusted, told me that in taking *her meals* on the passage home, the usual

knife, fork, spoon, and drinking cup, with the same ease as a human being; and with whatever food she was supplied, she preferred using a fork or a spoon to convey it to her mouth, to holding it in her hands. For more than three years she had been in possession of a Mr. Campbell, who left her at perfect liberty, never subjecting her to the slightest confinement. When he received her she was quite young — a mere baby, so that her present age may be supposed four or five years, rather than eight or nine. When on board ship she entertained a great dislike to black men, who used to tease and otherwise misuse her; but with the crew generally she appeared on excellent terms, and exhibited many traits of extreme docility."

CHINA-MARK [MOTHS]. A name given by collectors to Moths of the genera *Hydrocampa* and *Margaritia*.

CHINCHILLA. This little Rodent animal, so highly valued on account of its fur, is a native of South America, inhabiting the valleys in the high mountain districts, where the cold is often very severe. There are several species belonging to the natural family *Chinchillidæ*, of which this animal and the Viscacha of the Pampas are the chief. The colour of the Chinchilla is clear grey above,

CHINCHILLA.—(C. LANIGERA.)

passing into white on the under parts. It associates in numbers, and excavates burrows, in which it resides, feeding chiefly upon roots. In size and general form it much resembles the rabbit, with the exception of the tail, which turns up after the manner of a squirrel's. The fur is of a remarkably close and fine texture; and is, accordingly, much used in muffs, tippets, linings to cloaks, trimmings, &c.

CHIRONOMIDÆ. A sub-family of Dipterous insects, which frequent marshy situations, and very much resemble gnats. The species are of small size and very numerous; they often assemble in immense cloud-like swarms; and the name of *Midge* is given to them.

CHITON. A genus of marine Molluscs, inhabiting multivalve shells, several species of which are found on our own coasts. They adhere to rocks and stones, in general, near low-water mark. The shell is boat-shaped, composed of about eight transverse pieces, folding over each other at their edges, and inserted into a tough ligament. They sometimes attain a large size, but do not usually exceed two inches. They have the power of rolling themselves up into a ball, like the wood-louse. Several new species these shells were collected in the Eastern Archipelago by Sir Edward Belcher and Mr. Adams during the voyage of H. M. S. Samarang; two of which, viz., *Chiton pelseneeri*, which is described as a beautiful little brig

SCALY ARMADILLO-SHELL. (CHITON SQUAMOSUS.)

scarlet shell enframed within a broad ovall ligament of the same striking colour; a *Chiton formosus*, — a most exquisite lit species, of a bright scarlet colour, surround with dense tufts of white shining glassy s culæ. For a revision of this genus, se paper by Mr. Gray, recently publishe Mr. L. Reeve has published figures of ma of the species in his "Conchologia Iconica Mr. Cuming collected a very great numb of beautiful species, many of which are the fine collection of the British Museu and it is to be hoped that the Governme will procure for the National Museum whole of Mr. Cuming's magnificent collecti of shells.

CHLAMYDOSAURUS. A genus of Sa rians, described by Mr. Gray, from a spe men discovered in Australia by the la Allan Cunningham, F.L.S., who (betwe the years 1818 and 1822) accompanied Ca King's expedition as His Majesty's botanis collector for Kew Gardens. It was taken the branch of a tree, and sent to Sir Everar Home, by whom it was deposited in the M seum of the Royal College of Surgeons. Mr. Cunningham's Journal, it is described a lizard of extraordinary appearance, hav a curious crenated membrane, like a ruff tippet round its neck, covering its shoulde and when expanded, which it was enable to do by means of transverse slender car lages, spreading five inches in the form of open umbrella. Its head was large, and eyes, whilst living, rather prominent; tongue, though bifid, was short, and appear to be tubular. From Mr. Gray's descripti of the *Chlamydosaurus Kingii* (the Fril Lizard), in the Appendix to Capt. King Voyage, we learn that the animal was sca colour yellowish brown, variegated wi black; head depressed, with the side ere leaving a blunt ridge on the upper pa wherein the eyes are placed. The frill ari from the hinder part of the head, is attache to the sides of the neck, and extends down the front part of the chest, supported above a lunate cartilage arising from the hind dorsal part of the ear, and in the centre by bone which extends about half its leng Each frill has four plates which converge the under part of the chin, and fold in up

the side, and a fifth where the two are united in the centre of the lower part of the neck. The front part of its upper edge is elegantly serrated, and the outer surface is covered with articulated scales; the inner surface being quite smooth. The scales of the back are oval; those of the lower part of the body and upper part of the legs have a short mid-rib, and those of the sides and joints of the limbs are minute. The body is five inches long, the tail twelve, the head nearly six, and the outer edge of the frill ten inches: the toes are long, very unequal, compressed, and scaly: the claws are hooked, and horn-coloured. This frill increases in size more in proportion than the animal's growth; in the young it does not reach to the base of the fore limbs, while in the adult it becomes much fuller, and reaches considerably beyond the axilla.

KING'S FRILLED LIZARD.
(CHLAMYDOSAURUS KINGII.)

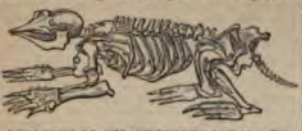
It would seem to be not uncommon about Port Essington; and it is found in other parts of Australia. Captain George Grey (now governor of New Zealand) met with it, and gives us the following interesting notice of its habits in the first volume of his Travels. He says, "As we were pursuing our route in the afternoon, we fell in with a specimen of the remarkable Frilled Lizard; this animal measures about twenty-four inches from the tip of the nose to the point of its tail, and lives principally in trees, although it can run very swiftly along the ground: when not provoked or disturbed, it moves quietly about, with its frill lying back in plaits upon the body: but it is very irascible, and directly it is frightened, it elevates the frill or ruff, and makes for a tree; where, if overtaken, it throws itself upon its stern, raising its head and chest as high as it can upon the hind-legs, then doubling its tail underneath the body, and displaying a very formidable set of teeth, faces the assailant, biting fiercely whatever is presented to it, and even venturing so far in its rage as to fairly make a fierce charge at its enemy. We repeatedly tried the courage of this lizard, and it certainly fought bravely whenever attacked. From the animal making so much use of this frill as a covering and means of defence for its body, this is most probably one of the uses to which Nature intended the appendage should be applied. The whole animal is full-toned, obscurely varied with brown; the young being more distinctly marked with regularly waved black streaks, forming broad bands across the back, limbs, and tail."

CHLAMYPHORUS. An edentate quadruped, found in South America, in which several characters of different tribes are remarkably blended. Like the Armadillo, it has a tessulated shield, the consistence of which is between horn and leather; but instead of being firmly attached by its whole under surface to the integuments beneath, it is connected with the back only by a ridge of skin along the spine, and with the skull by two bony prominences from the forehead. In the form of its feet, its imperfect eyes, the conical shape of its snout, and its general habits, it resembles the mole. It is a native of Chili, but is so rare even there as to be regarded by the natives as a curiosity. The total length of the entire animal is five inches and a quarter. The shelly covering is composed of a series of plates of a square, rhomboidal, or cubical form, each row separated by a membranous substance, which is reflected above and beneath, over the plates: the rows include from fifteen to twenty-two plates, the shell being broadest at its posterior half, extending about one half round the body. This covering is loose throughout, except along the spine of the back and top of the head. The number of rows of plates on the back, counting from the vertex, where they commence, is twenty-four; the shell then curves suddenly downwards, so as to form a right angle with the body: this truncated surface is composed of plates, nearly similar to those of the back, and are disposed in semicircular rows; the lower margin, somewhat elliptical, has a notch in its centre, in which is attached the free portion of the tail, which curves abruptly, and runs beneath the belly parallel to the axis of the body, the extremity of the tail being depressed, so as to form a paddle. The superior semicircular margin of the truncated surface, together with the lateral margins of the shell, are beautifully fringed with silky hair.

CHLAMYPHORUS TRUNCATUS.

The following points of resemblance between the *skeleton* of *Chlamyphorus* and that of other quadrupeds have been noticed by Mr. Yarrell:—1. Beaver (*Castor fiber*), in the form and substance of some of the bones

of the limbs, in the flattened and dilated extremity of the tail, and the elongation of the transverse processes of the lower caudal vertebræ. 2. Mole (*Talpa Europea*), in the shortness and great strength of the legs, and



SKELETON OF CHLAMYPHORUS TRUNCATUS.

in the articulation of the claws to the first phalanges of the toes. 3. Sloth (*Bradypus tridactylus*), in the form of the teeth, and in the acute descending process of the zygoma. 4. Armadillo (*Dasypus*), in the coat of mail, in the peculiar ossification of the cervical vertebræ, in possessing the sesamoid bones of the feet, and in the general form of the bones, except those of the pelvis. 5. *Orycteropus Capensis* and *Myrmecophaga jubata*, in some of the bones. 6. *Echidna* and *Ornithorhynchus*, in the form of the first bone of the sternum, and in the bony articulations as well as the dilated connecting plates of the true and false ribs. 7. and 8. *Ruminantia* and *Pachydermata*, in the form of the lower jaw, &c. The unique points in its osteological structure appear to be the form of the head and the open pelvis. Dr. Buckland considers *Chlamyphorus* one of the nearest approximations to *Megatherium*, particularly in regard to its coat of mail, and in the adaptation of the animal for digging.

Dr. Harlan, who first described this remarkable animal, says, "We have been presented in the subject before us with a *new form;* an animal combining in its external configuration a mechanical arrangement of parts which characterizes, respectively, the armadillo, the sloth, and the mole; constituting in themselves, individually and separately, of all other quadrupeds, those which offer the most remarkable anatomical characters. * * * The structure of this animal, Dr. Harlan goes on to say, taken collectively, furnishes us with an example of *organic structure*, if not unparalleled, not surpassed in the history of animals."—*Ann. New York Lyceum*, p. 245.

CHOCOLATE-TIP [MOTHS]. A name given by collectors to Moths of the genus *Clostera*.

CHONDROPTERYGII. The term for one of the great classes or families of fishes; characterized by the cartilaginous nature of the spines and bones. Cuvier divides the *Chondropterygii* into two orders, — those which have their gills free, as in the generality of fishes, and those in which they are fixed, — that is, the external edge attached to the skin.

CHOUGH (CORNISH), or RED-LEGGED CROW. (*Pyrrhocorax graculus.*) A bird somewhat taller and longer than the Jackdaw, whose habits it in many respects resembles. Its colour is a beautiful glossed with blue and purple; the long, curved, sharp at the tip, and of orange-red; the legs are of a similar with black claws. It builds on hig by the sea side, lays four or five eggs, with yellow, and chiefly frequents th of Cornwall, Devonshire, and Wales. It is sometimes found on the cliffs of in Scotland, and the Hebrides. Its state it feeds principally on insects a ries. It is easily tamed, becomes ex docile, and is very fond of being caress those to whom it shows an attachment shrill notes and mischievous qualit der it sometimes a troublesome inm also becomes bold and pugnacious, sents an affront with violence and e

CHRYSIDIDÆ, or GOLDEN W A family of Hymenopterous insects, which seek the nests of other insects, to deposit their eggs. They are g distinguished by a peculiar brill colour, are very active, and are seen

CHRYSIS IGNITA.

about in the sunshine, settling up walls, palings, &c. The most comm at the same time most beautiful Briti cies, is the *Chrysis ignita:* it is about of the common window fly, and is of deep blue-green colour on the hea thorax, with the abdomen of a bu golden-copper hue.

CHRYSOCHLORIS, or CAPE MO Rodent quadruped very much resembli mole in general structure and habits. is no external ear, nor any appearance eye externally; the body is thick and and the claws are particularly well a for digging and burrowing in the ear it is chiefly distinguished by the s colours of its fur, and is the only quadruped which exhibits anything l metallic lustre that adorns numerous fishes, and insects. The best known (*Chrysochloris Capensis*) is, as the na plies, a native of the Cape of Good H

CHRYSOMELA; CHRYSOMEL An extensive genus and family of Co rous insects, generally of a small or m size, and frequently ornamented w most brilliant colours, amongst whic green, and gold are pre-eminently c cuous. The antennæ are moniliform, cning towards the tip; the thorax tra and the body ovate, oblong, or subcu rical.—*Chrysomela Graminis* is a c but highly elegant insect, of a most but deep golden-green colour; sha tremely convex.—*Chrysomela Betulæ*,

one of the richest of the
irely of the most brilliant
ass-green. The species of
mela, and others separated
istinguished by the posses-
d an oval or rounded body.
Chrysomela Populi is one
mon species. It is of a blue-
ith red elytra, tipped with
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is of an oblong-ovate form,
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ical tubercles, and the ab-
ts have also two rows of
and lateral tubercles, from
from the joints of the legs
s of a fetid fluid are emitted
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he leaves in clusters. The
having the excuviæ of the
n a mass at the extremity of
larvæ of some species of this
society, upon leaves, pre-
more most orderly rows.
st elegant species found in
tes of North America (ac-
Harris) is the *Chrysomela*
conte, literally the ladder
The head, thorax, and under
y are dark green, the wing-
hite, ornamented with small
the sides, and a broad jagged
he suture or inner edges;
d legs are rust-red; and the
-coloured. It is a beautiful
ying, with its silvery wing-
d with green, raised up, and
gs spread out beneath them.
habit the elm and lime trees,
ey may be found in April,
, and a second brood of them
and October. They pass the
, and under leaves and moss.
hich they live are sometimes
ured by them and their larvæ.
hatched from eggs laid by the
leaves in the spring, and,
wn, are about half an inch
its colour, with a black line
f the back, and a row of small
pots on each side of the body;
rny, and of an ochre-yellow
ody is short and very thick,
ng upwards in the middle.

gprinus cephalus.) This fish
many parts of Europe, and is

(CYPRINUS CEPHALUS.)

n in our own island. It fre-
p holes of rivers, and, during
season, commonly lies on the
surface of the water, beneath some tree or bush. In shape the Chub rather resembles the Tench, but is of a more lengthened form, and has a larger head in proportion. It is from fourteen to eighteen inches in length; its colour silvery, with a bluish olive cast on its upper parts; the sides bluish white, passing into silvery white on the belly; the scales very large, and the lateral line nearly straight; the dorsal fin is rather small, and situated on the middle of the back; the pectoral fins are of a pale yellow; the ventral and anal fins are red; and the tail is slightly forked, and of a dull bluish-brown colour. It feeds on worms, caterpillars, grasshoppers, beetles, and other coleopterous insects which happen to fall into the water.

CICADA. The family of insects bearing the generic name *Cicadæ*, or *Cicadidæ*, are nearly all inhabitants of tropical or the warmer temperate regions. The most common European species is the *Cicada plebeia* of Linnæus; an insect often commemorated by the ancient poets, but generally confounded by the major part of translators with the Grasshopper. It is a native of the warmer parts of Europe, particularly of Italy and Greece; appearing in the hotter months of summer, and continuing its shrill chirping during the greatest part of the day, generally sitting among the leaves of trees. These insects proceed from eggs deposited by the

MANNAH FLY.—(CICADA ORNI.)

parent in and about the roots of trees, near the ground; and after having remained in the larva state nearly two years, cast their skins, and produce the complete insect.

The male Cicada produces a loud chirping note, and much has been written in praise of it by Anacreon and other ancient authors; it is certain, however, that modern ears are offended rather than pleased with its voice, which is so very strong and stridulous that it fatigues by its incessant repetition. That a sound so piercing should proceed from so small a body may well excite our astonishment; and the curious apparatus by which it is produced has justly claimed the attention of the most celebrated investigators. They have found that it proceeds from a pair of concave membranes, seated on each side the first joints of the abdomen: the large concavities of the abdomen, immediately under the two broad lamellæ in the male insect, are also faced by a thin, pellucid, iridescent membrane, serving to increase and reverberate the sound; and a strong muscular apparatus is exerted for the purpose of moving the necessary organs.

Among the large and elegant insects in this division is the *Cicada hæmatodes*, distinguished by its shining black body, with the

divisions of the abdomen marked by numerous scarlet rings or bands; and the *Cicada viridis*, a large species, native of New Holland, of a beautiful green colour, with the transparent wings ornamented by green veins.

Cicada septendecim, or Seventeen-year Cicada. It is well remarked by Dr. Thaddeus Harris, that "the duration of life in winged insects is comparatively very short, seldom exceeding two or three weeks in extent, and in many is limited to the same number of days or hours. To increase and multiply is their principal business in this period of their existence, if not the only one, and the natural term of their life ends when this is accomplished. In their previous states, however, they often pass a much longer time, the length of which depends, in great measure, upon the nature and abundance of their food." The *harvest-flies* continue only a few weeks after their final transformation, and their only nourishment consists of vegetable juices, which they obtain by piercing the bark and leaves of plants with their beaks; and during this period they lay their eggs and then perish. They are, however, amply compensated for the shortness of their life in the winged state by the length of their previous existence, during which they are wingless and grub-like in form, and live under ground, where they obtain their food only by much labour in perforating the soil among the roots of plants, the juices of which they imbibe by suction. To meet the difficulties of their situation and the precarious supply of their food, a remarkable longevity is assigned to them; and one species has obtained the name of *Cicada septendecim*, on account of its life being protracted to the period of seventeen years. This insect, in the perfect state, is of a black colour, with transparent wings and wing-covers, the thick anterior edge and larger veins of which are orange-red, and near the tips of the latter there is a dusky zigzag line in the form of the letter W; the eyes when living are also red; the rings of the body are edged with dull orange; and the legs are of the same colour. The wings expand from two inches and a half to three inches and a quarter.

In those parts of the United States, as we are informed, which are subject to the visitation of this Cicada, it may be seen in forests of oak about the middle of June. Here such immense numbers are sometimes congregated, as to bend and even break down the limbs of the trees by their weight, and the woods resound with the din of their discordant drums from morn to eve. After pairing, the females proceed to prepare a nest for the reception of their eggs. They select, for this purpose, branches of a moderate size, which they clasp on both sides with their legs, and then bending down the piercer at an angle of about forty-five degrees, they repeatedly thrust it obliquely into the bark and wood in the direction of the fibres, at the same time putting in motion the lateral saws, and in this way detach little splinters of the wood at one end, so as to form a kind of fibrous lid or cover to the perforation. The hole is bored obliquely to the pith, and is gra enlarged by a repetition of the same tion, till a longitudinal fissure is for sufficient extent to receive from ten to t eggs. The side pieces of the piercer a groove to convey the eggs into th where they are deposited in pairs, side, but separated from each other portion of woody fibre, and they planted into the limb somewhat obl so that one end points upwards. Wh eggs have been thus placed, the insect draws the piercer for a moment, and inserts it again and drops two more a line with the first, and repeats the tion till she has filled the fissure fro end to the other, upon which she reme a little distance, and begins to make a nest to contain two more rows of eggs. Is about fifteen minutes in preparing a nest and filling it with eggs; but it unusual for her to make fifteen or fissures in the same limb; and one ob counted fifty nests extending along its each containing fifteen or twenty two rows, and all of them apparent work of one insect. After one limb sufficiently stocked, the Cicada goes other, and passes from limb to limb from tree to tree, till her store, which sists of four or five hundred eggs, hausted. At length she becomes so w her incessant labours to provide for cession of her kind, as to falter and attempting to fly, and soon dies.

Although the Cicadas abound most the oak, they resort occasionally to forest-trees, and even to shrubs, wh pelled by the necessity for depositing eggs, and not unfrequently commit t fruit-trees, when the latter are in the nity. Indeed there seem to be no t shrubs that are exempted from their a except those of the pine and fir tribes, these even the white cedar is sometim vaded by them. The punctured limb gulish and die soon after the eggs whic placed in them are hatched; they are by the winds or by their own weigh either remain hanging by the bark al fall with their withered foliage to the g In this way orchards have suffered se in consequence of the injurious pun of these insects. The eggs are one of an inch long, and one sixteenth inch through the middle, but taper a end to an obtuse point, and are of a white colour. The shell is so thin and cate that the form of the included inse be seen before the egg is hatched.

The young insect when it bursts th is one sixteenth of an inch long, and yellowish white colour, except the eye the claws of the fore-legs, which are re and it is covered with little hairs. It it is somewhat grub-like, being lon proportion than the parent insect, furnished with six legs, the first p which are very large, shaped almos lobster-claws, and armed with strong beneath. On the shoulders are little minences in the place of wings; and the breast is a long beak for suction.

eap, is still more remarkable ich carries the gosling to the as it is hatched. In those ac- the result of foresight, of me- experience, animals are con- ir own reason, as in those to e led by the use of their ordi- r by the indulgence of their tites they may be said to be he laws of their organization; arise from special and extra- nets, we see the most striking creative wisdom which has them an unerring guide, where uses, and the appetites would hem. On reaching the ground mediately bury themselves in wing by means of their broad e-feet, which, like those of the mirably adapted for digging. appear ordinarily to descend nto the ground, but remain re most abundant. The only which they are subject during od of their subterranean con- increase of size, and the more elopement of the four small minences on their backs, which actually contain their future

e of their transformation ap- y gradually ascend towards the ng in their progress cylindrical ntimes very circuitous, and sel- perpendicular, the sides of nly cemented and varnished so erproof. When the insect has ached the surface it takes up its abitation till the period for its Here it remains during several ng to the top of the hole in fine the benefit of the warmth and occasionally peeping forth ap- ressonnaitre, but descending

tions, has appeared as full of holes as a honeycomb. Within about a fortnight after their final transformation they begin to lay their eggs, and in the space of six weeks the whole generation becomes extinct. Fortunately these insects are appointed to return only at periods so distant, that vegetation often has time to recover from the injury inflicted by them. They have also many enemies, which contribute to diminish their numbers. Their eggs are eaten by birds; the young, when they first issue from the shell, are preyed upon by ants, which mount the trees to feed upon them, or destroy them when they are about to enter the ground. Blackbirds eat them when turned up by the plough in fields, and hogs are excessively fond of them, and, when suffered to go at large in the woods, root them up, and devour immense numbers just before the arrival of the period of their final transformation, when they are lodged immediately under the surface of the soil. We may mention that one species has been found in this country, where, however, it is rare; it has been called *Cicada Anglica*, but seems not to be distinct from a common European species.

CICADIDÆ. The first family of Homopterous insects, in the section TRIMERA, and corresponds with the *Cicadæ mauniferæ* of Linnæus. It embraces the largest insects in the order, one species measuring between six and seven inches in the expanse of its wings. [See CICADA.]

CICINDELA: CICINDELIDÆ; or TIGER BEETLES. A genus and family of Coleopterous insects remarkable for the celerity and vigour of their flight; characterized by the great projection of the eyes, long and sharply pointed jaws; thorax depressed and nearly square; and the legs and antennæ long and slender. They are generally seen on the

from six inches to a foot in depth. The head is very large, and slightly concave; the jaws are curved and strong; and the

MANTICORA MAXILLOSA

body is humped near the middle of the back, at which part there are two hooked tubercles. In the process of excavation they use their jaws and feet, and load the concave back of their heads with the grains of earth which they have detached; thus loaded, they ascend backwards, resting at intervals, and fixing themselves to the inner walls of their burrow by the assistance of the two hooked tubercles on the back; and when arrived at the orifice, they jerk off their load to a distance. The Cicindelæ are all voracious; and when their prey comes within their reach, they rush upon it with great ferocity.

CILIOGRADA. An order of *Acalephæ*, or gelatinous transparent marine animals, distinguished by their continually agitating the cilia with which their contractile bodies are provided; organs which possess the phosphorescent faculty in a very high degree. [For examples, see BEROE, and MEDUSA.]

CIMBEX; CIMBICIDÆ. A genus and family of Hymenopterous insects, allied to *Tenthredinetæ*, or *Saw-flies* (as they are com-

CIMBEX VARIABILIS AND ITS LARVA.

monly called, from their saw-like ovipositor), comprising those species which have the antennæ alike in both sexes, and terminated by a knob or a reversed cone round the tip, preceded by four or five joints, the two subcostal nerves being contig without a wide intermediate space. larvæ of these insects greatly resembl Caterpillars of Lepidopterous insects, have from eighteen to twenty-two fe only six, which distinguishes them true caterpillars, which have from sixteen feet. In order to undergo change, they spin, either on the earth the plants upon which they have f cocoon, in which, like the rest of the fa they remain unchanged for many mo changing to pupæ only a few days b they become perfect Saw-flies.

CIMEX. A Linnæan genus of He terous insects, now subdivided into se families or sections, according to the ge shape or habit of the insects, and seve named *Cimicidæ*, *Pentatomidæ*, *Cydnidæ*, *reidæ*, *Lygeidæ*, *Reduviidæ*, *Acanthidæ*, *Hydrometridæ*: the two terminal joi the antennæ of hair-like fineness; much depressed; thorax transverse; ext four-jointed; labrum rather long pointed, and when the proboscis is n use, recurved under the head. The bed (*Cimex lectularius*) may serve as a ge example of this very extensive tribe. BUG.]

CINCLOSOMA. A genus of Pass birds, belonging to the *Turdidæ* fa The species *Cinclosoma punctatum*, or S ted Ground Thrush, inhabits Van Dieu Land and Eastern Australia. It prefe summits of low stony hills and rocky gr particularly those covered with scrub bushes. Its flight is very limited; b readily evades pursuit by running over stony surface and concealing itself a the underwood: when flushed suddenl rises with a loud whirring noise, like a Q or Partridge. Its note consists of a piping whistle. It is sold in Hobart-T market, with Bronzewings, Pigeons, Wattle-birds, and is known there as Ground Dove: doubtless from its terres habits and its flesh being excellent ea To its delicacy, and the large develop of the pectoral muscles, and the conte the body, resembling a Quail, Mr. G gives his testimony. It breeds in Oc and three following months. The nest, w is always placed on the ground, is a s and rather careless structure, compose leaves and the inner bark of trees, and a round, open form. The stomach of bird, on dissection, was found to co seeds and caterpillars, mingled with Another species, *Cinclosoma castan* found near the Swan River, is a much bird than the *C. punctatum*, and runs the ground faster; its shorter toes cons ably assisting its progressive motion.

CINCLUS. The Water-ouzel [which

CINNYRIS. CINNYRIDÆ. A g and family of small birds, remarkabl the splendid metallic lustre of their plu in which they rival the Humming-b (*Trochilidæ*). All the species inhabit

; chiefly Africa and India. [See
]

IPEDIA, or CIRRIPEDES. A
evertebrated animals, so named
curled and ciliated branchiæ
ermic from the oval aperture of
. They are divided into sessile,
ther themselves firmly united at
s to rocks or solid masses; and
ated, or attached by a long pedun-
stalk. They are closely allied to
ssea.

TIS. A genus of Coleoptera. [See
.]

LA: CISTELIDÆ. A genus and
f Coleopterous insects, belonging to
ion *Heteromera*. They are cha-
d by antennæ nearly filiform, the

CISTELA PERSICORNIS

errated; body ovoid, arched above;
g, but none of the legs formed for
; penultimate joint of the tarsi bi-
ndibles entire. They generally live
d leaves and flowers. They are an
nt group numerically, both as re-
nera and species, several being found
country.

LLUS. A small Rodent animal, of
us *Spermophilus*, with a long thin
ort tail, and of a silvery grey colour.
native of the northern parts of Eu-
d dwells in communities, great num-
them being usually found together
same cave, furnished with a store of
hestnuts, &c. Their flesh is well fla-
, and their skins are much valued.
EMOPHILUS.]

T. (*Viverra civetta.*) This animal,
ly known by the name of the Civet-
ngs to a genus of carnivorous, mam-
s quadrupeds, and is a native of
parts of Africa and India. It is
arly distinguished by having a se-
glandular receptacle, situated at
tle distance beneath the tail, wherein
d a powerfully odorous matter called
In general appearance, this animal
s one of the fox, which it also re-
s in its predatory habits; but the legs
rt, the tail is long, hairy, and cylin-
and the claws, though by no means so
s those of the cat, are still partially
ile. The ground colour of the body
owish-grey, with large dusky spots
disposed in longitudinal rows on each side; and a sort of upright mane on the neck and back. The tongue is covered with stout, horny prickles; and the ears are straight and rounded at the tips. The pouch, situated near the genitals, is a deep bag, sometimes divided into two cavities, whence a thick, oily, and strongly musk-like fluid is poured out. When good, this odoriferous substance is of a clear yellowish or brown colour, and of about the consistence of butter; when undiluted, the smell is powerful and very offensive, but when largely diluted with oil or other ingredients, it becomes an agreeable perfume. Important medical virtues were formerly attributed to the civet; it, however, not only no longer forms an article in the Materia Medica, but even as a perfume it has been laid aside. The foregoing description will apply to another species, the *Viverra zibetha*, except that this has no mane: it should be observed also, that the *Viverra civetta* is peculiar to Africa, and the *zibetha* to Asia.

CLADOCERA. An order of minute Crustacea, characterized by the body being inclosed in a bivalve shell, including, among others, the genus Daphnia.

CLAM. The shell of a species of Conchiferous Mollusca. [See TRIDACNA.]

CLAUSILIA. A genus of Mollusca chiefly inhabiting mosses at the foot of trees. The species are very numerous, and they are all small shells, in shape somewhat resembling the pupa or chrysalis of an insect; the largest scarcely exceeding an inch in length. Within the mouth, in the last whorl but one, there is a little elastic shelly plate attached to the shell, and called a *clausium*, from which the genus takes its name. It is used to close up the aperture when the animal has retreated within its shell, and in that respect resembles an operculum, except that the latter is attached to the animal, or is loose and thrown off, whereas the former is fixed permanently to the shell.

CLAVIGER. A genus of Coleopterous insects, of the section *Trimera*; characterized by six-jointed antennæ, the maxillary palpi very short, and the eyes apparently wanting. The species are found under stones, and in the nests of small yellow Ants. One was found a few years ago in a nest of *Formica flava*, by Mr. J. O. Westwood, at Ensham, Oxon, and it was considered one of our rarest insects; but Mr. F. Smith says (in the Zoologist), "I have been an examiner of ants' nests, and an observer of their habits, some years, and have searched in scores of the nests of *Formica flava* for the *Claviger*; and this perhaps is the reason why I have not found it. In the immediate neighbourhood of London there are no stony fields like those in chalky districts; and where the soil is subject to retaining a greater degree of moisture, like the London clay, the ant appears to find it necessary to raise up a hillock like a mole-hill, to the upper chambers of which she conveys her larvæ, eggs, and pupæ, as the atmospheric changes

render it necessary; but, on the contrary, at Mickleham I did not observe a single instance of any superstructure being raised, for, in a soil so light as in some places barely to cover the strata of chalk, the ant is glad to find a situation so suited to her purpose as the under side of a large stone, for here the necessary degree of moisture for the development of her progeny is retained in the earth. Now it will be obvious that the difficulty of detecting the Claviger amongst the accumulations of the ant-hill must be very great, but on removing the stones you are at once, as it were, admitted into the channels of the nest, filled with eggs, larvæ, and pupæ, and amongst these it is that Claviger is found. The first question which naturally arises is this:—What is the nature of the connexion between the two insects? P. W. J. Müller, in Germar's Magazin der Entomologie,' informs us that the ants altogether support the Clavigers for the sake of a peculiar secretion which exudes from them, and which the ants suck from the two flocks of hair that terminate the external angles of the elytra,—that the ants occasionally caress the Clavigers, which then give out a fresh supply of the fluid,—that the Claviger is wholly dependent for support on the ants, and that they feed it with juices extracted from flowers, &c. * * * I am inclined to the opinion that the only purpose for which these insects are retained by the ants, is for the sake of the fluid which they extract from them; I feel convinced that there are hundreds of nests without them: they are most numerous during the early summer months, whilst the larvæ are in the nests; and I was at one time inclined, from that circumstance, to think that the fluid extracted from them might serve to nurture

CLAVIGER LONGICORNIS.

particular sexes of ants, but the fact of their not inhabiting every nest at once decides the question." The species figured is the *Claviger longicornis*, which differs considerably from the preceding, but has the same general appearance.

CLAVICORNES. The name given to a family of Pentamerous beetles, whose antennæ end in a club-shaped enlargement: they are partly terrestrial, and partly aquatic.

CLAY [MOTHS]. A name given by collectors to Moths of the genus *Geaphiphora*.

CLEAR-WING [HAWK-MOTHS]. A name given to the species of *Sphingidæ*, belonging to the genus *Aegeria*.

CLERUS; CLERIDÆ. A genus family of Coleopterous insects, of ... tent; generally handsomely variegated their colours, and seldom exceeding ... in length: the body is firm, long, and ... cylindric, with the head and thorax ... rower than the elytra; and the antenn... short, sometimes filiform and serrated ... species of the genus *Clerus* are among ... largest of the family; having the ely... nerally of a bright red colour, orna...

HIVE BEETLE.
(CLERUS [TRICHODES] APIARIUS)

with purple spots. The perfect insects ... the honey from flowers; but their ... which are of a bright red colour, a... destructive to bees and wasps, in the ... which the females deposit their eggs ... the absence of those insects, upon ... grubs the larvæ of the Clerus prey ... begin in the cell where they were h... and proceed from cell to cell, devouri... inhabitant until they arrive at matur...

CLIO; CLIONIDÆ. A genus and ... of naked marine molluscs, belonging ... order *Pteropoda*. They are particular... tinguished by having a pair of fin-like ... or wings, consisting of an expansion ... mantle on each side of the neck, an... nished with muscular fibres—a pecu... of structure by which they are enab... propel themselves rapidly through the

CLIO BOREALIS

So numerous are they in the Northe... Southern oceans, that the water ... literally alive with them; they are ... whales' food, and the sea is sometim... glutted with the Clios, that the whal... scarcely open their mouths without in... ing thousands of them. The Clio ... abounds in the Arctic seas, and th...

maroon colour, with the abdomen
ed with five yellowish spots. It
n the under side of stones, or in
rocks, a cocoon in the shape of a
ils, an inch in diameter, its cir-
having seven or eight festoons;
alone being fixed to the stone by
threads, whilst the edges of the
e free. This singular tent, the
ee resembling the finest taffety,
of a number of folds. When
ly constructs two layers, between
has its station. But subsequently,
each moulting, it adds other folds,
the period of reproduction arrives
another apartment expressly for
on of the size of eggs, and young
hed, of a softer texture. The in-
habitation is always remarkably
he bags in which the eggs are
four, five, or six in number in
tation; they are about one-third
in diameter, and of a lenticular
e eggs are not deposited till about
f December or in January, and
enveloped in fine down to guard
the cold. The edges of the fes-
being fastened together, the insect
creeps in and out at will by lifting
When the young are able to dis-
h the maternal cares, they quit
mon habitation and form separate
ed their parent dies in her tent,
hus its birthplace and its tomb.

ED YELLOW [BUTTERFLY].
plied by insect collectors to But-
the genus Colias.

A: CLUPEIDÆ. A genus and
Malacopterygious fishes; distin-
y their wanting the adipose fin, by
e upper jaw composed of the inter-
bones in the middle, and the
s at the sides, and by the body
ays covered with scales. To this
long the Herring, Sprat, Shad,
, &c. [which see].

low curved band or arch, of which the yellow scutel forms the key-stone, on the base of the wing-covers, behind this a zigzag yellow band forming the letter W, across the middle another yellow band arching backwards, and on the yellow tip a curved band and a black spot; the legs are yellow; and the under-side of the body is reddish yellow, variegated with brown. It is the largest known species of Clytus, being from nine to eleven tenths of an inch in length, and three or four tenths in breadth. It lays its eggs on the trunk of the maple in July and August. The grubs burrow into the bark as soon as they are hatched, and are thus protected during the winter. In the spring they penetrate deeper, and form, in the course of the summer, long and winding galleries in the wood, up and down the trunk. In order to check their devastations, they should be sought for in the spring, when they will readily be detected by the sawdust that they cast out of their burrows; and, by a judicious use of a knife and stiff wire, they may be cut out or destroyed before they have gone deeply into the wood. Many kinds of Clytus frequent flowers, for the sake of the pollen which they devour.

CLYTUS PICTUS. This other North American species has the form of the beautiful Maple Clytus. It is velvet black, and ornamented with transverse yellow bands, of which there are three on the head, four on the thorax, and six on the wing-covers, the tips of which are also edged with yellow. The first and second bands on each wing-cover are nearly straight; the third band forms a V, or, united with the opposite one, a W, as in the *C. speciosus*; the fourth is also angled, and runs upwards on the inner margin of the wing-cover towards the scutel; the fifth is broken or interruped by a longitudinal elevated line; and the sixth is arched, and consists of three little spots. The antennæ are dark brown; and the legs are rust-red. These insects vary from six-tenths to three quarters of an inch in length. We are informed by Dr. Harris, that in the month of September these beetles gather on the locust-

are soon hatched, and the grubs immediately burrow into the bark, where they remain during the ensuing winter in a torpid state, but in spring they bore more or less deeply into the trunk, the general course of their winding and irregular passages being in an upward direction from the place of their entrance.

COAL-FISH. (*Gadus carbonarius.*) A Malacopterygious fish, inhabiting the Baltic, the Northern, and the Mediterranean seas: it is common on most of our rocky and deep coasts, but particularly on those of Scotland, the Orkneys, and Yorkshire. The head and body are elegantly shaped; the scales small and oblong: the lateral line silvery white and nearly straight; the under jaw is somewhat longer than the upper; the lips tinged with purple red; the mouth black; the teeth very small; and the irides silvery white. When full grown, it is about two feet and a half long, and weighs thirty pounds; the head, dorsal fins, tail, and upper parts of the body are of a dusky black, which gradually softens into a silvery tinge as it approaches the abdomen; the tail is broad and forked. According to Mr. Pennant, the young begin to appear in vast shoals on the

COAL-FISH.—(GADUS CARBONARIUS.)

coast of Yorkshire, in July, and are at that time about an inch and a half long; in August they are from three to five inches in length, and are taken in great numbers with the rod and line, when they are esteemed a very delicate fish, but when about a year old they are so coarse that few people will eat them. Mr. Couch says, "It is in the highest condition from October to December, at which season it prowls after prey in large companies; so that when met with they prove a valuable capture to the fishermen; for though but coarse food, yet being wholesome, substantial, and cheap, they are eagerly purchased by the poor, either fresh or salted. They swim at no depth, and with great rapidity; but when attracted by bait, will keep near a boat till all are taken; and I have known four men in two boats, two men in each boat, take twenty-four hundred weight with lines in a very few hours. The season for spawning is early in spring; immediately after which this fish becomes so lank as to be worthless, in which state it continues through the summer."

These fish derive their English name from the dusky pigment which tinges their skin, and which, when they are handled, soils the fingers like moist coal. The young resort to the rocky bays of the Orkneys and Hebrides in immense numbers, where, according to the period of their growth, they are known by the names of *cuddy*, *sithe*, and *sillock*. On the Yorkshire coast the young are called *parrs*, and when a year old *billets*.

COATIMONDI. (*Nasua.*) An an bearing some affinity to the racoon, e that the neck and body are longer, th is shorter, and the eyes are smaller; it is more particularly distinguished the elongation of its snout, to whic scientific name *nasua* refers. By the n

RUFOUS COATIMONDI.—(NASUA RUFA

ance of this long flexible snout, whic somewhat truncated at the end, it roo the earth, in the manner of a hog, in q of earth-worms, &c. It also preys on smaller quadrupeds; but it lives more trees than upon the ground, and is a structive enemy of birds, their eggs, and fledged young. It is equal in size to a cat; its general colour is a cinereous bro the tail, which is of very considerable le is annulated with distinct circles of bl the ears are round, like those of a rat vered with short hair externally, but i nally with long whitish hair; the muz large, and the under jaw much shorter the upper. It is a native of Brazil.

COBITIS. [See LOACH.]

COBRA DI CAPELLO. The Portug name of the *Vipera naja*; called by English names of the HOODED SNAKE the SPECTACLE SNAKE. [See SNAKE.]

COCCINELLA: COCCINELLIDÆ. genus and family of Coleopterous ins characterized by their hemispheric form, upper part being convex, and the lower and further distinguished by the colour spots of their wings. Among these are cluded all the Lady-birds; one of whic the *Coccinella septempunctata* of Linn or common seven-spotted Lady-bird, well-known summer visitant of every and garden. Though these insects someti appear in great numbers, and have o sionally created much alarm, it is errone to suppose that they do any injury to v tation; on the contrary, both in the l and perfect state, they feed on the *Aph* which infest plants, and are consequentl

service: its larva has a rather dis-
able appearance; it is of a long oval
, with a pointed tail, of a black colour,

[illegible], WITH ITS LARVA AND PUPA.
[illegible] SEPTEMPUNCTATA.)

[illegible] and white specks, and a rough sur-
[illegible] changes to a short, blackish, oval
[illegible], spotted with red, and which gives
[illegible] its beautiful inmate in the months
[illegible] and June.

[illegible] different species of Coccinellæ are very
[illegible]; they are generally divided ac-
[illegible] to the ground-colour of their elytra,
[illegible] either red with black, yellow with
[illegible] black with red, or yellow with white
[illegible] One of the most beautiful of the
[illegible] species is the *Coccinella octodecim-*
[illegible] of Linnæus, or the eighteen-spotted
[illegible], which is of a bright yellow with
[illegible] black specks, and little more than
[illegible] of the common red kind above
[illegible].

[illegible] people who are familiar with our
[illegible] coasts have had opportunities
[illegible] the flight of extraordinary
[illegible] Lady-birds during the summer or
[illegible] months. The most recent instance
[illegible] we have seen publicly noticed
[illegible] following:—"On Friday, August 13,
[illegible] whole of the coast around Southend
[illegible] by one of the most numerous
[illegible] insects on record. They consisted
[illegible] five species of lady-bird, and they
[illegible] such dense numbers, as for miles
[illegible] coast to resemble a swarm of bees
[illegible]. The sea destroyed countless
[illegible] of them, the grass and hedge-rows,
[illegible] crevice that afforded shelter from
[illegible], were coloured with their numbers,
[illegible] many miles it was impossible to walk,
[illegible] crushing numbers beneath the tread.
[illegible] evidently came from the east,
[illegible] having veered round to that point
[illegible] the night. Every true friend of
[illegible], however, hails the appearance
[illegible] insects, as they are well-known to
[illegible] destroyers of *Aphides*, a race of flies
[illegible] injurious to vegetation. We found,
[illegible], that this phenomenon was not
[illegible] to the above mentioned locality;
[illegible] the same day Ramsgate, Margate,
[illegible], and the coasts of the adjacent
[illegible] hoods were similarly visited by
[illegible] of these Aphidivorous insects, which
[illegible] places were swept off the public
[illegible], and speedily consigned to a watery
[illegible].

Thaddeus Harris has the following sensible remarks on the valuable services of the *Coccinellæ*, when speaking of the "redoubtable enemies" which "seem expressly created to diminish the numbers" of the *Aphides*, or plant-lice. "These lice-destroyers are of three sorts. The first are the young or larvæ of the hemispherical beetles familiarly known by the name of lady-birds, and scientifically by that of *Coccinellæ*. These little beetles are generally yellow or red, with black spots, or black, with white, red, or yellow spots; there are many kinds of them, and they are very common and plentiful insects, and are generally diffused among plants. They live both in the perfect and young state, upon plant-lice, and hence their services are very considerable. Their young are small flattened grubs of a bluish or blue-back colour, spotted usually with red or yellow, and furnished with six legs near the fore-part of the body. They are hatched from little yellow eggs, laid in clusters among the plant-lice, so that they find themselves at once within reach of their prey, which, from their superior strength, they are enabled to seize and slaughter in great numbers. There are some of these lady-birds of a very small size, and blackish colour, sparingly clothed with short hairs, and sometimes with a yellow spot at the end of the wing-covers, whose young are clothed with short tufts or flakes of the most delicate white down. These insects belong to the genus *Scymnus*, which means a lion's whelp, and they well merit such a name, for their young, in proportion to their size, are as sanguinary and ferocious as the most savage beast of prey. I have often seen one of these little tufted animals preying upon the plant-lice, catching and devouring, with the greatest ease, lice nearly as large as its own body, one after another, in rapid succession, without apparently satiating its hunger or diminishing its activity." M. Mulsant, of Lyons, has published a volume on the *Coccinellidæ* of France, most of which are also found in this country: a monograph of the whole group by the same learned entomologist is in the press.

COCCUS. A genus of Hemipterous insects, including the Cochineal insect (*Coccus cacti.*) In this remarkable genus the males are much smaller than the females, and are furnished with wings, of which the females are destitute. The Cocci are found on the leaves and bark of various plants: hence they become injurious to many exotics in our hothouses and conservatories. One of the most common of these is the *Coccus adonidum*, a small oval-shaped insect of a pale rose-colour, slightly convex above, with the body divided into many transverse segments projecting sharply on the sides: it has six short legs, and the whole insect appears more or less covered with a fine white powder. When the female is full of eggs, she ceases to feed, and remaining fixed to one spot, envelops herself in a fine white fibrous cotton-like substance, and soon afterwards dies: the young, which are hatched under the body of the parent insect, proceeding from it in great numbers, and dis-

persing themselves in quest of food. It was originally introduced into Europe along with exotic plants from the warmer regions of Africa and America.

It may be remarked of the *Coccidæ* generally, that they are remarkable for their powers of propagation, and that when they once attack a plant or young tree, the minute size of the larvæ renders their extermination a very difficult task. We were particularly struck with the observations of the President of the Entomological Society (G. Newport, Esq. F. R. S.) in his "Anniversary Address," 1845—that so complete had been the ravages of the Coccus of the orange-trees, that one of the Azores, the island of Fayal, lost its entire produce from this cause alone. The usual exportation of fruit from Fayal had been 12,000 chests annually, but in 1843 not a single chest was exported. This injury had extended to St. Michael's; and the inhabitants of the whole of that group of volcanic islands, depending almost entirely on the produce of their orange-groves, and despairing of retrieving their prospects, were fast turning their attention to the cultivation of other objects of commerce. This amount of injury to a whole population, by a diminutive and apparently contemptible insect, was the result of but three years! It was therefore with great reason that the President laid some stress on the fact, and remarked, that *the effects of this insect on a single article of luxury might fairly be adduced to show that entomological inquiries are deserving of full attention.* They furnish, however, some very important products: the bodies of many species, being deeply coloured through their whole substance, yield dies of great value, the richness of which seems to depend upon the nature of the plant upon which they feed.

By far the most important of all is the *Coccus cacti*, or Cochineal Cactus, so celebrated for the beauty of the colour which it yields. This species is a native of South America, and was for a long time exclusively confined to Mexico, where it feeds on a species of cactus. The female or officinal Cochineal insect, in its full-grown pregnant or torpid state, swells or grows to such a size, in proportion to that of its first or creeping state, that the legs, antennæ, and proboscis, are so small with respect to the rest of the animal as hardly to be discovered by the naked eye; so that on a general view it bears a great resemblance to a seed or berry: hence arose that difference of opinion which at one period subsisted among writers; some maintaining that Cochineal was a berry, while others contended that it was an insect.

When the female insect is arrived at its full size, it fixes itself to the surface of the leaf, and envelopes itself in a kind of white down, which it spins or draws through its proboscis in a continued double filament. The male is a small and rather slender two-winged fly, about the size of a flea, with jointed antennæ and large white wings in proportion to the body, which is of a red colour, with two long filaments proceeding from the tail. When the female insect has discharged all its eggs, it becomes a mere husk, and dies; so that great care h to kill the insects before that time, to the young from escaping. The oper

COCHINEAL INSECT.—(COCCUS CA

collecting the insects, which is exce tedious, is performed by the women. merly," says Mr. M'Culloch, "it Mexico only that it was reared wit and formed a valuable article of com but its culture is now more or less a to in various parts of the West Ind of the United States. There are tw or varieties of Cochineal: the best or ticated, which the Spaniards call gra or fine grain; and the wild, which th *grana silvestra*. The former is near as large as the latter; probably bec size has been improved by the fav effects of human care, and of a more and suitable nourishment, derived from the *Cactus cochinellifer*, during generations. Wild cochineal is collec times in the year; but that which tivated is only collected thrice dur same period. The insects, of whic are about 70,000 in a pound, being d from the plants on which they fee blunt knife, are put into bags, and in boiling water to kill them, after they are dried in the sun. It is prin used in the dyeing of scarlet, crimso other esteemed colours. The watery i is of a violet crimson; the alcohol deep crimson; and the alkaline, of purple, or rather violet hue. It is in in bags, each containing about 200 lb has the appearance of small, dry, she rugose berries or seeds, of a dusky purple, or mulberry colour, with a matter between the wrinkles."

COCK. (*Gallus domesticus.*) The mon domestic Cock, the well-known tain of the poultry-yard, is subject numerable varieties, scarcely two being to resemble each other exactly in the plumage. At what time this valuab was brought under the control of m is now impossible to determine; but forests of many parts of India still

eral varieties of the Cock in the natural condition, it is quite rea- to conclude that the race was first ated in the East, and gradually l thence to the rest of the world. to be generally understood, indeed, Cock was first introduced into from Persia: it has, however, been established throughout the Western that to attempt to trace its progress native wilds would be a useless time. We figure what many na- regard as the origin of our domestic the very handsome Javanese wild t it is our firm belief that domes- animals are in general not traceable wild stock or race.

LNASE COCK.—(GALLUS BANKIVUS.)

Domestic Cock has his head sur- l by a notched, crimson, fleshy sub- called a comb; and two pendulous ollies of the same colour, termed hang under his throat. The hen a similar, but not so large nor so coloured excrescence on her head. k is provided with a sharp horn or the outside of his tarsus, with which ris severe wounds; the hen, instead r, has a mere knot or tubercle. There th sexes, below the ear, an oblong interior edge of which is reddish, remainder white. The feathers pairs from each sheath, touching by ints within the skin, but diverging course outwards. On the neck they , narrow, and floating; on the rump e of the same form, but drooping r over the extremity of the wings, re quite short, and terminate at the f the tail, the plumes of which are . In the centre of the Cock's tail long feathers, which fall backwards oeful arch, and add great beauty to le aspect of the fowl. It is in vain any description of the colour of the s, as it is infinitely varied, being in reeds of the greatest richness and , and in others of the simplest and f hue. Except in the pure white the plumage of the cock is always plendid than that of the hen: his t consciousness of personal beauty, and gallantry, seem never to forsake nther we regard his *stately march*, at the head of his train of wives and numerous offspring, or watch him as he crows defiance to a rival. His sexual powers are matured when he is about six months old, and his full vigour lasts for about three years.

The hen, if left to herself, forms a very indifferent nest: a simple hole scratched in the ground among a few bushes is the only preparation she usually makes, and she generally lays from twelve to fifteen eggs before she begins to sit upon them for the purpose of hatching. But she now becomes a model of enduring patience, remaining fixed in her place until the urgency of hunger forces her to go in search of food. During the time of her sitting she diligently turns and shifts her eggs, so that each may receive a due degree of genial warmth; and it is not until about three weeks have elapsed that the incubation is completed. The strongest of the progeny then begin to chip the shell with the bill, and are successively enabled to burst their brittle prisons. The whole family being at length emancipated, the parent leads them forth in search of food. In her nature the hen is timid; but in discharging the duties of maternity she becomes bold, and indiscriminately attacks every aggressor, watches over the safety of her young with the utmost jealousy, neglects the demands of her own appetite to divide the food she may obtain among her nurslings, and labours with untiring diligence to provide them sufficient sustenance.

The Cock is very attentive to his females, hardly ever losing sight of them: he leads, defends, and cherishes them; collects them together when they straggle, and seems to eat unwillingly till he sees them feeding around him. Mons. Parrmentier, a celebrated French naturalist, has thus described the Cock:—"He is considered to have every requisite quality when he is of a good middling size; when he carries his head high; has a quick animated look; a strong and shrill voice, short bill, and fine red comb, shining as if varnished; wattles of a large size, and of the same colour as the comb; the breast broad; the wings strong; the plumage black, or of an obscure red: the thighs very muscular; the legs thick, and furnished with strong spurs; the claws rather bent, and sharply pointed. He ought also to be free in his motions, to crow frequently, and to scratch the ground often in search of worms, not so much for himself as to treat his hens. He ought withal to be brisk, spirited, ardent, and ready in caressing the hens; quick in defending them, attentive in soliciting them to eat, in keeping them together, and in assembling them at night."

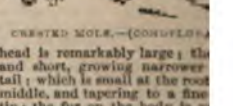
After the common or d..nghill breed which we have described, the principal varieties are—The GAME COCK, which is more distinguished for its unusual length of spur, and its courage, than for any great peculiarity in its plumage; the DORKING fowl, which has two toes behind, and is considerably larger than the other European species; the POLAND breed, which is black-feathered, *with white topknots*; the BANTAM COCK,

CONDOR. (*Sarcoramphus gryphus.*) A large species of vulture, the most exaggerated descriptions of whose size, as given by the earlier writers and naturalists, caused it to be long regarded as a giant of the feathered race, whose bulk darkened the air, and the rushing of whose mighty wings could only be compared to the roaring of a cataract. But these tales of wonder, like others of a similar nature, have lately given place to the sober reasonings of scientific truth, which, while correcting the extravagance of error, still leave us sufficient room for rational admiration. The Condor is found in the highest and most inaccessible parts of the Andes, over the loftiest summits of which it soars, in clear weather, to an amazing height. The elevation it chooses as its breeding-place

CONDOR.—(SARCORAMPHUS GRYPHUS.)

and habitual residence varies from 10,000 to 15,000 feet above the level of the sea; and here, on some isolated pinnacle or jutting ledge, it rears its brood. "The old birds," says Mr. Darwin, "generally live in pairs; but among the inland basaltic cliffs of the Santa Cruz, I found a spot where scores most usually haunt; on coming suddenly to the brow of the precipice, it was a grand spectacle to see between twenty and thirty of these great birds start heavily from their resting-place, and wheel away in majestic circles." "Except when rising from the ground," he adds, "I do not recollect ever having seen one of these birds flap its wings. Near Lima I watched several for nearly half an hour without once taking off my eyes. They moved in large curves, sweeping in circles, descending and ascending without once flapping. As they glided close over my head, I intently watched from an oblique position the outlines of the separate and terminal feathers of the wing; if there had been the least vibratory movement, these would have blended together; but they were seen distinct against the blue sky. The head and neck were moved frequently, and apparently with force; and it appeared as if the extended wings formed the fulcrum on which the movements of the neck, body, and tail acted. If the bird wished to descend, the wings were for a moment collapsed; and then, when again expanded with an altered inclination, the momentum gained by the rapid descent seemed to urge the bird upwards with the even and steady movement of a paper kite." The Condor feeds, like other vultures, chiefly on dead carcasses, but two will frequently unite their forces to overpower and devour the puma and other large animals. It descends to the plains in search the stories of its attacking child fabulous. It makes no nest, large white eggs on a shelf of young birds for many months only with a fine thick down, remain with the parent bird, for an entire year. At mat prevailing colour of the male is with a tinge of grey. The coverts, except at the base and secondary quill-feathers, are white ruff of downy feathers base of the neck: the crest, or is fleshy, or rather cartilagino the top of the head and about of the beak, and is entirely wa female: the skin of the neck under the throat into a kind o along the sides of the neck run skinny stripe or band, the proce are moveable at will. The tail somewhat wedge-shaped. L four feet; expanse of wing abo tarel powerful. Various trap gems are made use of to capture the *lasso* being among the m genus *Sarcoramphus* is peculiar World, and contains, besides the King-vulture, and Californ

CONDYLURA. (*Condylura* mole-like animal of North Am has the termination of the rounded by movable cartilagi that radiate like a star when ex



CRESTED MOLE.—(CONDYLUR

head is remarkably large; th and short, growing narrower tail; which is small at the roo middle, and tapering to a fine tip: the fur on the body is v and shining. In Kalm's deser animal, he says, "It had gre and strength in its legs than I in other animals, in proportion Whenever it intended to dig, it obliquely like oars. I laid my before it, and it began to scr snout; and taking away the to see what it had done to it, in the space of a minute it had of holes, and it looked as if pierced very much by an awl. to put some books on the cov in which I kept this animal, flung off immediately. It was and would bite great holes that was put in its way: I held case to it; it at first bit at it w lence, but having felt its harsh not venture again to bite a

do not make such hills as the
s, but only little subterraneous
elds, forming banks about four
y two inches thick, and which
trod upon.

[See Eel.]

RES. This term is used to
birds which have a strong co-
margin of which is not toothed
The greater part of these are
but some are exclusively gra-
uvier observes that they live
exclusively upon seeds, in pro-
eir bill is more or less thick,
gs, and Finches are examples

n extensive genus of univalve
shells of which are thick,

D ANIMAL OF THE CONUS
BANDANTS

, as it were, in a conical form.
d principally in the southern
ens; and many of them are
l both in shape and colour.
is much compressed and in-
ead very distinct, terminated
able of great extension; two
h eyes near the summit; foot
.

US CALEDONICUS.

e species, such as the *Conus*
for example, have fetched
es. The cones are very hand-
and agreeable in colour, and
lly much prized by collectors.
nying figures will give some
ions. In the British Museum
fine collection of them. The
rby have monographed the
ured all the species.

S. A genus of fossil Cepha-
l, straight, or slightly curved;
external covering, independent
. The difference between Be-
Conilites, is that the external
latter is thin, and not filled up
tter, from the point of the al-
pex, as in the former.

COOT. A genus of birds of the order *Grallatores*. They are distinguished from all other birds by the remarkable structure of the membranes on the toes: the inner toe is furnished with two of these appendages, or rather scallops, the middle one with three, and the outer with four; the hinder toe has a simple membrane only, extending its whole length. They are met with in various parts of Europe, Asia, and America: they delight in marshy and wet places, hiding themselves during the day, and venturing forth in the evening in search of food, which consists of insects and aquatic vegetables. The Common Coot (*Fulica atra*) is about sixteen inches in length: its beak is white, slightly tinged with rose-colour; the head and neck deep black; the upper parts of the plumage of a slaty black, and all the under parts of a greyish-blue or lead-colour. The skin is clothed with a thick down, and covered with close fine feathers: thighs placed far behind, fleshy, and strong, bare, and yellow above the knee-joints: legs and toes commonly of a yellowish-green, but sometimes of a lead-colour. From the bill, almost to the crown of the head, there is an excrescence, or fleshy lobe, destitute of feathers, soft, smooth, and round; on which account this bird is sometimes called the *bald* Coot. This species is common in many parts of England, particularly in the Southampton river, and in the Isle of Sheppey; and it is generally believed that it does not migrate to other countries, but changes its stations, and removes in the autumn from ponds and small lakes, where the young have been reared, to the larger lakes, where flocks assemble in the winter. It is usual for them to build their nests in a bush of rushes, surrounded by the water: it is composed of a great quantity of coarse dried weeds, well matted together, and lined within with softer and finer grasses: the female lays from twelve to fifteen eggs, and generally hatches twice in a season; the eggs are about the size of those of a pullet, and are of a pale brownish-white, sprinkled with numerous dark spots, which at the thicker end are like large irregular blotches. A variety, excelling the other in size and the deeper blackness of its plumage, is found in Scotland; also in Lancashire and some of the adjacent counties.

Another species, called Wilson's Coot (*Fulica Wilsoni*), inhabit various parts of North America, and make their appearance in Pennsylvania in the beginning of October among the muddy flats and islands of the river Delaware, which are overgrown with reeds and rushes, and are periodically overflowed. The chief distinctions between this species and the Common Coot consist in the callous knob on the forehead being of a deep chestnut: the feathers of the vent are quite black, and the under tail-coverts white; and there are a few white feathers on the upper edge of the wing.—There is also a very singular species inhabiting Madagascar, called the Crested Coot (*Fulica cristata*). It measures eighteen inches in length; its bill is red at the base, and whitish towards the tip; the crown of the head is bare, of a

deep red, and rising into a bifid, detached, crest-like membrane. The entire plumage is blue-black: its legs are dusky, with a tricolor ring or garter above the knee, red green, and yellow.

COPPER [BUTTERFLY]. A name applied by collectors to Butterflies of the genus *Lycæna*. [See LYCÆNA.]

COPRIDÆ. A family of Coleopterous insects allied to the *Scarabei*. The name *Copris* is from the Greek word for dung, in which the insects are found. Some of them have the head and thorax singularly armed. They are generally of a dull black colour: but some of the species of the American ge-

BLUE AMERICAN DUNG-BEETLE. (PHANÆUS SAPPHIRINUS.)

nus *Phanæus* perfectly glow with rich green, red, and blue colours. Our figure, derived from Sturm's Catalogue, represents the brilliant blue *Phanæus sapphirinus* of Brazil. There are but few species of this family found in this country.

CORACIAS. A genus of Passerine birds. [See ROLLER.]

CORALLINA. The name given by Linnæus to a genus or group of marine organized bodies, of the class *Vermes*, order *Zoophyta*. The animals of this genus are arborescent or tree-like in form; the stem fixed, with calcareous subdivided branches, mostly jointed. Neither pores nor polypes are distinguishable on the surface of these beings; and they were formerly supposed to be vegetable; but they give the most evident tokens of large portions of ammonia, the common test of animal substance, and have been often traced to spontaneous motion. Every tube, vesicle, or articulation, is probably the enclosure of a distinct animal, so that the entire mass or tree is a family; in this respect resembling the vegetable tree, in which every bud may also be regarded as an individual living plant. [See POLYPES, ACTINIA, &c.]

We may in this place very consistently introduce some observations made by late writers on Coral Reefs and Islands, the Coral Fishery, &c. With regard to the growth of coral, it has been observed, that many errors have prevailed upon this subject, both as to the rapidity of their extension, and the depth from which they are built up to the surface of the ocean. It has been commonly stated that many channels and harbours in the Red Sea have been closed up, within the memory of man, by the rapid increase of *coral limestone*. But Ehrenberg, who carefully examined these localities, attributes the obstruction rather, in some in the quantities of coral sand which washed into the harbours, and in the accumulation of ballast (gene posed of pieces of coral rock) t from vessels. * * * There doubt that, whether the growt takes place as rapidly as some m as slowly as it is believed to do it is among the most important gressive changes, which have be the surface of the globe since it tenanted by man. To it is due th of a large proportion of the isla Polynesian Archipelago, as well those in the Indian Ocean; and of these islands is far less than t reefs which are not yet raised abo of the sea,—some presenting the a distance from any upraised la fringing the shores of continents a composed of other formations. It rect, however, to affirm (as has quently done) that these islands have been upreared by the Co from the depths of the ocean. It tisfactorily ascertained that no cies can build from a greater d twenty fathoms; and a large seem to prefer a depth of from thirty feet. As very deep water i the immediate neighbourhood of these reefs, the question arises, basis they are constructed; and t it is necessary to look at the fo these massive structures present.

"A large proportion of the Co of the Polynesian Archipelago, Carpenter observes, "are shape crescent, sometimes like a comp and these islands never rise many the surface of the ocean. The h is always on the windward [eas against which the waves are al stantly dashing. Within the s ring is a basin, termed a *lagoon*, usually communicates with the op a channel, sometimes of considera on the leeward side of the island. ally this channel is completely fi the growth of the coral; and the inclosed, only communicates wit by filtration through the Coral Coral-polypes never build above mark; and they are not, therefo diately concerned in the elevati surface from beneath the waves, principally accomplished by the the sea itself. Large masses are tached, by the violence of the w the lower part of the structure, (sometimes measuring six feet h washed up on the windward side Shells, coral-sand, and various oth accumulate upon it in like manne is at last changed into an island, there is a calcareous soil capable o ing various kinds of vegetation. W have once established themselves, tion of the surface continues with pidity—successive layers of vegeta being deposited by the rapid and vegetation of these tropical islan

ed by various forms of ani-
ce subsequent period afford
lan."
island which was evidently
Capt. Flinders thus reasons:
, that when the animalcules
urals at the bottom of the
ive, their structures adhere
virtue either of the gluti-
ible, or of some property in
the interstices being gra-
with sand and broken pieces
by the sea, which also ad-
rock is at length formed.
hese animalcules erect their
n the rising bank, and die
increase, but principally to
nument of their wonderful
are taken to work perpen-
early stages, would mark a
ct in these diminutive crea-
all of coral, for the most
s where the winds are con-
ived at the surface, affords
ward of which their infant
e safely sent forth; and to
tive foresight it seems to be
windward side of a reef,
pen sea, is generally, if not
hest part, and rises almost
ometimes from the depth of
s many more fathoms. To
vered with water seems ne-
xistence of the animalcules,
work, except in holes upon
d low-water mark; but the
d other broken remnants
the sea adhere to the rock,
d mass with it, as high as the
reach. That elevation sur-
ure remnants, being rarely
eir adhesive property; and
a loose state, form what is
lap upon the top of the reef.
is not long in being visited
it plants take root upon it,
s to be formed; a cocoa nut,
f a pandanus is thrown on
rds visit it, and deposit the
and trees; every high tide,
rvery gale, adds something to
form of an island is gradually
last of all comes man to take

in this place respecting the
y may not be inappropriate.
fishing being nearly the same
is found, it will suffice to state
pted by the French, under the
company established at Mar-
or eight men go in a boat com-
proprietor; and when the net
he caster, the rest work the
lp to draw the net in. The
d of two rafters of wood tied
leads fixed to them; to these
quantity of hemp twisted
and intermingled with some
This instrument is let down
nk there is coral, and pulled
n the coral is strongly en-
hemp and netting. For this,
ometimes required; and if, in

hauling in, the rope happens to break, the fishermen run the hazard of being lost. Before the fishers go to sea they agree for the price of the coral; and they engage, on pain of corporal punishment, that neither they nor their crew shall embezzle any, but deliver the whole to the proprietors. Red Coral is found in the Mediterranean, on the shores of Provence, about the isles of Majorca and Minorca, on the south of Sicily; on the coast of Africa; and, lastly, in the Ethiopic Ocean, and about Cape Negro. The divers say that the little branches are found only in the caverns whose situation is parallel to the earth's surface, and open to the south.

CORBULA. A genus of marine Mollusca, some species inhabiting the British coasts. Shell regular, inequivalve, and inequilateral, scarcely gaping; one cardinal spoon-shaped tooth in each valve, but no lateral; ligament interior. These small shells are met with in the seas of New Holland, China, and South America.

COREIDÆ. A family of Hemiptera, of which there are a few brown coloured species in this country; in tropical climates, where there is a luxuriant vegetation, they abound, and from their size, and frequently grotesque shapes, as may be seen in the British Museum collection, are very striking. In the example figured (*Diactor bilineatus*), a native

LEAF-LEGGED COREUS.
(DIACTOR BILINEATUS.)

of Brazil, the hind legs have singular leaf-like appendages to their tibial joints. This, however, is common to many other species. The smell of these insects is peculiar; the word *cimicine* may be used to express it; it is very far from agreeable, and has associations connected with it by no means pleasing.

COREGONUS. The *Guiniad*. A genus of Malacopterygious fishes, belonging to the *Salmonidæ* family, distinguished by a small trout-like mouth, but with few teeth, and sometimes none; the scales rather large; and the dorsal fin short. There are many species of this genus, some in the sea, others in the fresh waters only. It feeds on insects, and minute fresh-water Crustacea.

They seem to abound in the Arctic parts

of North America; one especially we may mention, the *Coregonus albus*, called the *White-fish* by the fur traders, and *Poisson blanc* by the Canadians. It is from seventeen to twenty inches long. It is bluish-grey on the back, lighter on the sides, and white on the belly; the scales are large and orbicular; there are about eighty scales on the lateral line, and twenty in an oblique series from the dorsal. This species in particular abounds in the lakes of North America. Dr. King, speaking of it, says, "Take, for instance, the *white-fish* only—the *Coregonus albus*, which has never failed to yield to the fisherman's net every demand—the bread of life to the inhabitants of North America, as I have called it, in gratitude for its being the provision which saved my party when in search of Sir John Ross from the death of starvation. This is a food upon which man will not only live for several months together, but actually fatten."

CORMORANT. (*Phalacrocorax.*) Among the whole of the web-footed birds which prey on fish, there are none so voracious as Cormorants. They are most excellent divers, and pursue their prey with astonishing facility beneath the surface of the water, but

COMMON CORMORANT.
(PHALACROCORAX CARBO.)

upon land they are extremely awkward in their movements, owing to their legs being placed so far backwards: they, however, fly with rapidity; and their tail being rather long and furnished with strong feathers, it helps to support their body while walking. As soon as winter approaches, they are seen dispersed along the sea-shores, entering the mouths of fresh-water rivers, and threatening destruction to all the finny tribe. There are several species, but a description of the one common in this country will be sufficient for our purpose. This, which is called by Bewick, the Great Black Cormorant, is said to vary from four to seven pounds in weight, and the size from thirty-two inches to three feet four or five in length, and from four feet to four feet six inches in breadth when the wings are extended. The bill, to the corners of the mouth, measures four inches, and on its ridge two inches and three quarters: it is of a dark horn colour, and the tip of the upper mandible is much hooked and sharp: the lower bill is compressed, and covered about the gape of the mouth with a naked yellowish skin, extended under the chin and throat, where it hangs loose, and forms a kind of pouch, which is capable of distention to a great width: the skin about the eyes is also naked and yellowish, and the eyes have a remarkably wild stare. The crown of the head and the neck are black; and on the former are some loose feathers, which form a sort of short crest; the breast, all the under parts, and the rump, are black glossed with green; the quills and tail-feathers are black; the legs black.

The Cormorant is found in every climate. In Greenland, where it is said they remain throughout the year, the jugular pouch is made use of by the natives as a bladder to float their fishing-darts, after they are thrown; their skins, which are tough, are used by them for garments, and their flesh, which is rank and disagreeable, for food. They usually assemble in flocks on the inaccessible parts of the rocks which overhang or are surrounded by the sea; upon which the female makes her nest of withered sea-weeds, sticks, and grasses: she lays four or more greenish-white eggs, about the size, but somewhat longer, than those of a goose. At sea, or on the inland lakes, they make a terrible havoc. From the greatest heights they drop down upon the object of pursuit, dive after it with the rapidity of a dart, and, with an almost unerring certainty, seize the victim; then emerging, with the fish across the bill, with a kind of twirl, throw it up into the air, and dexterously catching it head foremost, swallow it whole.

Notwithstanding the natural wildness of their disposition, it seems that certain species of these birds have formerly been tamed and rendered subservient to the purposes of man, both in this and in other countries. Among the Chinese, it is said, they have frequently been trained to fish, and that some fishermen keep many of them for that purpose, by which they gain a livelihood. In England too, formerly, according to Willoughby, they were hoodwinked in the manner of the falcons, till they were let off to fish, and a leather thong was tied round the lower part of their necks, to prevent their swallowing the fish. The whole deportment of the Cormorant indicates the wary circumspect plunderer, the unrelenting tyrant, and the greedy insatiate glutton, rendered lazy only when the appetite is palled: it ought, however, to be observed, that this bird, like other animals, led only by the cravings of appetite, and directed by instinct, fills the place and pursues the course assigned to it by nature.

It may be thought that we have already dwelt at sufficient length on the nature and habits of the Cormorant; nor would we trespass farther but for the pleasure it affords us to quote from that inimitable writer

whose pleasing descriptions
ent either in bold originality
. Walton Hall, the seat of
has long been a perfect asy-
the feathered tribes as have
to make it their permanent
may therefore well say, while
ause [see the Preface to his
ssess the very best oppor-
rving the birds whose habits
d." "The Cormorants," he
pay me a visit in the winter
uld they but perceive that
for them here, and great
e, they would remain with
ater is unfrozen. But they
unately, through parts where
t afforded them; and, being
s in the eyes of the neighbour-
rs, they are immediately shot
ch find their way here are so
danger, that, after they have
rable portion of time in diving
ill come and preen their fea-
ference which rises from the
ten yards of the drawing-room

ocant may be justly styled
terror of the finny tribe. His
g is most admirable, and his
d belief. You may know him
among a thousand water-fowl,
t neck, by his body being ap-
f immersed in the water, and
perpetually in motion when
While the ducks and teal and
stationary on the pool, the Cor-
n swimming to and fro, 'as if in
thing.' First raising his body
ndicular, down he plunges into
nd, after staying there a con-
e, he is sure to bring up a fish,
variably swallows head foremost.
half an hour elapses before he
to accommodate a large eel
s stomach. You see him strain-
y, with repeated efforts to gulp
en you fancy that the slippery
successfully disposed of, all on
e eel retrogrades upwards from
sepulchre, struggling violently to
he Cormorant swallows it again;
in it comes and shows its tail a
re out of its destroyer's mouth.
worn out with ineffectual writh-
slidings, the eel is gulped down
Cormorant's stomach for the last
to meet its dreaded and inevita-
This gormandizing exhibition was
here by several individuals, both
d gentlemen, on Nov. 26, 1832,
an excellent eight and twenty
lescope; the Cormorant being, at
, not more than a hundred yards
rom the observers. I was of the
[For other species, such as the Chi-
ing Cormorant and the Australian
nt, see PHALACROCORAX.]

IDÆ. The Crow tribe; a family
which belong to the *Conirostres*.
vidæ are very widely diffused over
e; the general characters are consequently well known. They have a strong bill, compressed at the sides, and covered at the base with stiff feathers, which advance forwards so as to cover the nostrils: the bill is capable of laying hold of almost any kind of food, and the stomach of digesting it. The form of their foot adapts them to traverse the fields and pastures with facility, in search of food; whilst they can also perch with security on trees, the tarsi and toes being moderately long and stout, and the claws arched and acute. Their wings are of that form which ensures a powerful and regular flight; steady without being heavy, and buoyant without wavering; for they are broad and moderately long, and usually rounded at their extremities. The tail, which is chiefly used as a rudder to direct the course of the bird in rapid flight, is short in the species that seek their food entirely on the ground, and long in those which reside chiefly in trees and bushes. Their sight is keen and distant; they often show great sagacity in their natural actions; they possess much docility; and their courage and activity are only equalled by their caution and vigilance. In most of the species inhabiting temperate climates their plumage is rather sombre; but though dark in hue, it is lustrous; while many species in tropical climates exhibit considerable brilliancy and variety in their colouring. [See CROWS.]

COSSUS. A genus of nocturnal Lepidoptera, the larvæ of which feed on wood. There are several species found in other climates; but we restrict our notice to the British species.

COSSUS LIGNIPERDA, or GOAT MOTH. This is one of the largest European Moths, being nearly three inches in the expansion of its fore-wings, the colour of which is ashy white, clouded with brown, and marked with an infinite number of short, black, irregular streaks, forming a kind of network: the hind wings are brown, with darker reticulations extending along the margins. The thorax is ochre-coloured in front, pale in the middle, and with a black bar behind: abdomen brown, with the margins of the segments pale yellowish grey.

GOAT MOTH.—(COSSUS LIGNIPERDA.)

The Caterpillar, which is nearly as large as a man's finger, is of a dull fleshy hue, with dark chestnut scales on the back of each segment, and a few scattered hairs. It chiefly feeds upon willows and poplars, but will attack various other trees, boring into the

timber, and frequently doing very serious damage. It forms a rough cocoon of the chips of wood, which it has bitten to pieces,

CATERPILLAR OF THE GOAT MOTH.

fastening them together with a glutinous secretion, and lining them with its silken web. The pupa has the head-case acute, and each of the abdominal segments is furnished with several rows of reflexed spiny hooks; by the aid of which the pupa, shortly before arriving at the perfect state, is enabled to push itself through its cocoon, and to the surface of the tree; out of the aperture of which the exuviæ may be seen partially sticking after the moth has made its escape.

PUPA AND COCOON OF THE GOAT MOTH.

The strength of their jaws is so great that they will very soon destroy any common chip-box in which the larva may be placed, by abrading the edges, to gain its liberty. In breaking up decayed pollards, we not unfrequently find this grub in all the stages of its growth; but more generally observe them without inhabitants, yet perforated with holes large enough to admit the finger. "I suspect," says Mr. Knapp, "that these anger worms are the primary cause of the decay of the tree; having often observed their perforations, and found them, both large and small, in the solid spur or root of the tree, when the upper portion, having been bored, and in a state of decline, is abandoned by them. Those that are full fed appear to form their cases in that part which has lost coherency, while the younger and imperfected creatures mine their way, and obtain nutriment in the solid timber, thus killing the tree by inches; when rain and moisture find lodgment, and complete the dissolution. One year's preparation is the period usually assigned to the larvæ of most insects, before they arrive at their perfect state; but by the Goat-Moth three years are required before it attains its winged state from th Consequently, for the larger portion life it is occupied in these destructive tions; and thus this creature becomes powerful agent in reducing these Ti the vegetable world, crumbling them to their original dust: for what was d to be the termination and punishm Man, is found in active operation thro the whole chain of Nature's works, are but dust, and unto dust return tinuing an endless series of producti decay, of restoration and of change."

We may mention, that one of the extraordinary works on Natural Histo published is devoted to the anatomy inseet. It is by Lyonet. It will be cient to state, in order to give some the careful manner in which the an of this caterpillar has been studied h that the author of the "Traité Anatom discovered not fewer than 4061 muse its body; 228 being attached to the 1647 to the body, and 1686 to the int whereas in the human body only 2 been discovered; so that this caterpill eesses nearly eight times as many m as are contained in the human fram has an offensive smell, from which it its popular English name.

CORYPHÆNA. A genus of Acan terygious fishes, family *Scombridæ*; times called *Dolphins*, but not to b founded with the Dolphin proper, belongs to the *Cetacea*. The principa racters by which they are distinguish as follows:—Body elongated, comp covered with small scales; dorsal fin e ing nearly the whole length of the ba tail more or less forked, and the p fin usually arched above and pointed. have the head much elevated, and the and both jaws furnished with teeth. fishes are very rapid in their motions, rally of large size, and they prey up flying-fish. The greater part inhab Mediterranean. (See DOLPHIN.)

COTTIDÆ. A family of Acanthe gious fishes, with hard or mailed c the sub-orbitals being united to the pr culum, and so expanded as to cover a part on the whole of the cheeks. The many characters in common with th *cidæ*; in short, a family likeness p among the fish possessing this check notwithstanding the various forms head that result from its greater or l velopment. In one group of genera, th has the form of a cube; in another round; in a third it is compressed; fourth group is composed of fish of h aspect, with a monstrous head and v eyes. The only forms among the C that have anything like a general dis tion are the larger genera of *Trigla*, *Aspidophorus*, *Scorpæna*, *Sebastes*, and *tercottus*, containing the majority whole species. The range of individu cies is more remarkable in this family In the more extensive one of *Perci* is evident when we consider the num species which cross the Atlantic; and

some analogy between the
ter of the higher classes of
ng been observed that the
birds common to the Old
are species that have a high
—*Sir John Richardson, M. D.,*
r.

genus of Acanthopterygious
aracterized by having a
nished more or less with
es. [See BULL-HEAD.]

male of the Bovine species,
mable to man of all rumi-
da. [See OX.]

NG. (*Molothrus pecoris.*)
Passerine bird in North
ost remarkable trait in the
ich is, the unaccountable
f dropping its eggs into the
birds, instead of building
e itself; and thus entirely
progeny to the care and
ers. "About the 25th of
in April," says Wilson,
d makes his first appearance
from the south, sometimes
the red-winged blackbird,
in detached parties, resting
ing, an hour at a time, on
near streams of water, ap-
ellent, and fatigued. They
casionally seen, in small
particularly along creeks
ers, so late as the middle of

—(MOLOTHRUS PECORIS.)

ch we see no more of them
beginning or middle of
ey re-appear in much larger
accompanied by numbers
between whom and the
here is a considerable simi-
s, dialect, and personal re-
those aerial voyages, like
d navigators, they take ad-
direction of the wind, and
ith a favourable gale."
wn to those who have paid
manners of birds, that, after
ly finished, a day or two
before the female begins
lay is in most cases neces-
ness to the yet damp ma-
er them time to dry. In
nstances met with, and laid
nting, the result of which
found to be the desertion
its rightful owner, and the
consequent loss of the egg thus dropt in it by the intruder. But when the owner herself has begun to lay, and there are one or more eggs in the nest before the Cow-Bunting deposits hers, the attachment of the proprietor is secured, and remains unshaken until incubation is fully performed, and the little stranger is able to provide for itself. * * * I have never known more than one egg of the Cow-Bunting dropt in the same nest. This egg is somewhat larger than that of the blue-bird, thickly sprinkled with grains of pale brown on a dirty white ground. It is of a size proportionable to that of the bird."

"What reason Nature may have for this extraordinary deviation from her general practice is, I confess, altogether beyond my comprehension. There is nothing singular to be observed in the anatomical structure of the bird that would seem to prevent, or render it incapable of incubation. The extreme heat of our climate is probably one reason why, in the months of July and August, they are not to be seen here. Yet we have many other migratory birds that regularly pass through Pennsylvania to the north, leaving a few residents behind them; who, without exception, build their own nests and rear their own young. This part of the country also abounds with suitable food, such as they usually subsist on. Many conjectures, indeed, might be formed as to the probable cause; but all of them that have occurred to me are unsatisfactory and inconsistent. Future, and more numerous observations, made with care, particularly in those countries where they most usually pass the summer, may throw more light on this matter; till then, we can only rest satisfied with the reality of the fact."

The length of this species is seven inches, breadth eleven inches; the head and neck is of a very deep silky drab; the upper part of the breast a dark changeable violet; the rest of the bird is black, with a considerable gloss of green when exposed to a good light: the tail is slightly forked: legs and claws, glossy black, strong, and muscular; iris of the eye, dark hazel. The young male birds are at first altogether brown, and for a month or more are naked of feathers round the eye and mouth; the breast is also spotted like that of a thrush, with light drab and darker streaks. In about two months after they leave the nest, the black commences at the shoulders of the wings, and gradually increases along each side, as the young feathers come out, until the bird appears mottled on the back and breast with deep black, and light drab. At three months the colours of the plumage are complete, and, except in moulting, they are subject to no periodical change.

COWRIES. A genus of shells used in the East Indies, and many parts of Africa, as the current coin of the natives. [See CYPRÆA.]

COW-FISH. [See MANATUS.]

COYPU. (*Myopotamus coypus.*) A South American rodent animal, resembling the

beaver in many respects, though of a smaller size. Its head is large and depressed; ears small and rounded; muzzle pointed, with long stiff whiskers. Its hind feet are webbed, and its habits are aquatic; it swims with

COYPU.—(MYOPOTAMUS COYPUS.)

great ease, lives in the vicinity of water, and burrows in the ground. Its tail is round, instead of being flattened like the beaver, and its scaly covering is partly concealed by scattered hairs. It is easily domesticated, and its manners in captivity are very mild. The Coypu has two kinds of fur: long ruddy hair, which gives the tone of colour; and a brownish ash-coloured fur at its base, which, like that of the beaver, is used largely in the manufacture of hats. It is believed that about 800,000 skins of this animal, under the name of *Neutria* skins, have sometimes been imported into Britain from South America in the course of a year. There is, or was lately, in the gardens of the Zoological Society, a live specimen of this water-loving creature, which enjoyed itself much by diving, while the ease and grace of its manners could not but gratify the visitors.

CRAB. (*Cancer.*) The name of a considerable group of invertebrate animals, whose bodies are covered by an external skeleton, or calcareous crust, having ten articulated limbs, adapted for swimming or walking, and breathing by gills. The head and corselet are united, the latter being broader than it is long: the tail is short in proportion, and concealed by being turned forward beneath the body. They belong to the section of ten-legged, short-tailed Crustacea (*Decapoda brachyura*) of the latest systems, and are of numerous species, exceedingly various in size, colour, and modes of living. The sense of sight, in most of the species, is peculiarly acute, and enables them to distinguish the approach of objects from a very considerable distance. But they are mostly remarkable for a complex and elaborate apparatus for mastication. The mouth is furnished with at least eight pieces or pairs of jaws, which pass the food through an extremely short gullet into a membranous stomach of considerable size. This stomach is rendered curious by having within certain cartilaginous appendages, to which strong grinding teeth are attached. These are five in number, and placed at the pyloric extremity, or outlet of the stomach, so that the aliment, after being subjected to the action of the jaws, is again more perfectly chewed by the stomach-teeth, before entering the digestive tube, where it is expos[illegible] action of the biliary fluid of the liv[illegible] latter organ is of great size in these [illegible] and is all that soft, rich, yellow [illegible] found immediately beneath the [illegible] shell, called the *fat* of the Crab. [illegible] posterior to the stomach (commonl[illegible] *sand-bag*), the heart is situated,— [illegible] what globular, whitish body, which [illegible] a colourless lymph to the gills (cal[illegible] *men's fingers*) and rest of the body, [illegible] it is brought back to the heart by [illegible] vein (*vena cava*) of considerable size.

The process of sloughing, moul[illegible] throwing off the entire calcareous [illegible] which constitutes their only sk[illegible] common to all the *Crustacea*, and [illegible] worthy of attention. As it is obvi[illegible] the hard shell, when once perfected [illegible] change with the growth of the a[illegible] becomes necessary that it should [illegible] entirely; and this shedding takes [illegible] regular periods, at which the inc[illegible] size occurs. No one can behold t[illegible] claws or forceps of various species, [illegible] smallness of the joints between th[illegible] the body, without feeling some surp[illegible] the creature should be able to extric[illegible] from the old shell, though this is [illegible] accomplished. The aquatic Crab [illegible] the season of shedding arrives, g[illegible] seek the sandy shores of creeks an[illegible] and, having selected a situation, the[illegible] at rest, and the change begins. T[illegible] of the Crab seems to swell, the lar[illegible] shell is gradually detached at th[illegible] or where it joins the thorax or [illegible] and the membrane gradually giv[illegible] and rises up from behind, somewhat [illegible] lid of a chest. The Crab next b[illegible] withdraw the limbs from their ca[illegible] the large muscles of the claws un[illegible] softening, which allows of their bein[illegible] through the smaller joints. This m[illegible] is slowly effected, and, at the time [illegible] complished, the parts about the mo[illegible] antennæ, and eyes, are withdrawn fr[illegible] old cases, and the animal escapes, [illegible] its original figure, but soft, helpl[illegible] incapable of exertion or resistance [illegible] gentle and not very obvious mo[illegible] next observe the sand displaced be[illegible] body, and the Crab begins to be cover[illegible] it, until, at length, he is sufficiently [illegible] for safety, though still in sight. [illegible] generally in shallow water, where [illegible] shines freely upon the bottom; [illegible] the course of twelve hours, the [illegible] membrane begins to harden, so as to [illegible] like paper when pressed upon, [illegible] process of hardening goes on so rapid[illegible] by the end of the next forty-eigh[illegible] the Crab regains something of his [illegible] solidity and ability to protect him[illegible] flight or resistance.

The habits of Crabs are very [illegible] some are exclusively aquatic, and [illegible] on the sands or rocks, at great depth [illegible] sea; others inhabit excavations fo[illegible] the soft coral reefs or bars on certain [illegible] some spend their days altogether o[illegible] living in burrows or dens, formed in [illegible] or boggy soil; others resort to the [illegible]

bask in the sun, where only
l wave dashes over them, and
the sea when alarmed; while
are completely terrestrial, in-
upon the highest hills and
the West Indies.

AND-CRABS the most remarkable
formerly so abundant in the
Jamaica (*Gecarcinus ruricola*),
mon in less densely peopled or
islands. When the season for

AMAICA LAND CRAB.
CARCINUS RURICOLA.)

rives, vast armies of them set
hills, marching in a direct line
sea-shore, for the purpose of
ir eggs in the sand. On this
tion nothing is allowed to turn
heir course. With unyielding
they surmount every obstacle
ntervene, whether a house, rock,
ly, not avoiding the labour of
going round, but ascending
ver it in a straight line. Having
destined limit of their journey,
their eggs in the sand, and re-
heir toilsome march towards
retreats. They set out after
d steadily advance, until the
daylight warns them to seek
in the inequalities of the ground,
y kind of rubbish, where they
d until the stars again invite
ose their undeviating course.
ward journey they are in full
fine condition; and this is the
ey are caught in great numbers
. Their flesh, which is of the
ness, is highly esteemed, but,
ll crustaceous animals, is rather
digestion. Returning from the
are exhausted, poor, and no
use. They then retire to their
ere they slough or shed their
ort time after which operation,
their soft state, they are con-
picures at most delicious, and
ntly sought for with avidity.

ds which take up their abode
ty of sugar-cane fields are very
the planter; some of the species
ularly fond of the cane, the
h they suck and chiefly subsist
e of course narrowly watched,
rtunity of catching them is lost
t such is the wonderful facility
running, or rather darting in
s, or with any part of their
ost, that they are almost always
clude capture. It is seldom,
t they go far from their burrows
ime; and their vigilance is such

that they regain them in a moment, and disappear securely, as soon as a man or dog comes near enough to be seen.

Many of the habits of these animals have attracted the notice of travellers. Dr. Gardner, in his "Travels in Brazil," says that while he was near Rio San Francisco,

LARGE-CLAWED CALLING CRAB
(GELASIMUS.)

he amused himself "by watching the operations of a small species, belonging to the genus *Gelasimus*, that was either making or enlarging its burrow in the sand. About once in every two minutes it came up to the surface with a quantity of sand enclosed in its left claw, which, by a sudden jerk, it ejected to the distance of about six inches, always taking care to vary the direction in which it was thrown, so as to prevent its accumulation in one place."

Another species of Land Crab, apparently belonging to the genus *Thelpheusa*, which inhabits India, is thus noticed by Bishop Heber, in his Journal:—"All the grass through the Deccan generally swarms with a small Land Crab, which burrows in the ground and runs with considerable swiftness, even when encumbered with a bundle of food as big as itself: this food is grass, or the green stalks of rice; and it is amusing to see the Crabs, sitting, as it were, upright, cut their hay with their sharp pincers, and then waddling off with their sheaf to their holes, as quickly as their sidelong pace will carry them." They have been found on the table-lands, at an elevation of nearly 4000 feet; but it is believed that they do not perform an annual migration to the sea, for the purpose of depositing their eggs.

CRABRO: CRABRONIDÆ. A genus and family of Hymenopterous insects, popularly known as Wood-wasps. Most of the larger species are marked with yellow rings; the smaller are generally wholly black. They are extremely active in their movements, and may be seen busily employed, in the hottest sunshine, extracting nectar from the flowers of plants, or running about in search of other insects, on which they prey. They excavate cells in the ground, or in rotten posts, timber, &c., in which they deposit their eggs, together with the flies, &c., which constitute the food of the larvæ when hatched. Many species are found in this country: we refer our readers who may wish further acquaintance with them, to the capital work of Mr. Shuckard on the Indigenous Fossorial Hymenoptera.

CRACIDÆ. A family of Gallinaceous birds, peculiar to tropical America, which

approach the turkey in size and grandeur of appearance. They live in the woods, feed on berries, &c., and build on trees; but they are easily domesticated, and their flesh is exceeded by no fowl in delicacy and whiteness. [See CURASSOW.]

CRACTICUS. [See CROW SHRIKE.]

CRAKE. The CORN-CRAKE, or LAND-RAIL, (*Ortygometra crex*), which is very similar to the Water-rail, is fond of woody places, and high herbage or corn-fields in the vicinity of water, or in marshy places, where it breeds; making its nest of a few dry plants, put carelessly together, and laying ten or twelve eggs of a dull white, marked with rust-colour spots. The bill is short, strong, and thick; all the feathers on the upper part of the plumage are of a dark brown, edged with light bay; the wing-coverts and quills are deep chestnut; the fore parts of the neck and breast are pale cinereous; the belly is a yellowish-white; and the legs are a pale flesh-colour. It is much sought after for the delicacy of its flesh, but it is a difficult bird to spring. The legs, which are remarkably long for the size of the bird, hang down while it is on the wing; and, in general, it seems rather inclined to swiftness of foot than rapidity of flight. It is migratory, appearing in England about the beginning of April, and departing in October. At the time of its arrival the bird is extremely lean; but before it quits the island it becomes excessively fat. Its food is chiefly worms, snails, and insects; but it also occasionally feeds on seeds and various vegetables. Its note (crek-crek-crek), rapidly repeated, has been compared to the noise made by drawing a finger along the teeth of a comb.

CRAMP-FISH. A name by which the Torpedo is sometimes called. [See TORPEDO.]

CRANE. Birds of the Crane kind (family *Grusidæ*) subsist on herbs, seeds, worms, frogs, and slugs; they reside in marshy places, rarely visiting the sea shores, and are found in various parts of the world; but only one, the COMMON CRANE, (*Grus cinerea*), is a native of Europe. This bird frequently measures upwards of five feet in length, and weighs about ten pounds; its gait is erect, and its figure tall and slender. The bill is about four inches long, straight, pointed, and compressed at the sides, of a greenish-black, turning lighter towards the point; tongue broad and short, and horny at the top. The forehead, to the middle of the crown, is covered with black hairy down, through which the skin appears red; behind this it is nearly bare to the neck, which is ash grey. The sides of the head behind the eyes, and the hinder part of the neck, are white. The space between the bill and eyes, the cheeks, and fore part of the neck, are a blackish ash; greater wing-coverts also blackish; and those farthest from the body, with the bastard wing and quills, quite black: the rest of the plumage is a fine waved light ash. From the pinion of each wing springs an elegant tuft of loose feathers, curled at the ends, which fall gracefully over the tail, in their flexibility, position, and texture, resembling the plumes of the ostrich. The legs and bare part of the thighs are black.

The Crane is migratory, and, soaring high in the air, performs the boldest and most distant journeys. In summer they spread themselves over the north of Europe and Asia as far as the arctic circle; and in the winter they are met with in India, Syria, Egypt, &c. They formerly visited the fens and marshes of this country in large flocks; but they seem to have been driven away by the advance of cultivation, which has elsewhere, as here, deprived it of many of its most congenial localities. The female lays two greyish-green eggs, spotted with brown.

The SIBERIAN CRANE (*Grus gigantea*) inhabits the great marshes and lakes of Siberia: it builds its nest, of herbs and grass, in almost inaccessible situations amongst the reeds; where the female lays two eggs: both sexes are said to watch the nest alternately; and during the period of incubation, although they are very shy at other times, they will boldly attack any person that approaches their haunts. This species is four feet six inches in height; the bill large and red; the face naked beyond the eyes, and of a red colour; the greater quills and their coverts deep black, the rest of the plumage snowy white; the tail nearly even; the legs red.

The BROWN CRANE (*Grus Canadensis*) is a native of North America, migrating northward in the spring to breed, and returning to the south in autumn. It is three feet three inches long, and its beak about four inches, the tip of the under mandible being of a pale flesh-colour: the top of the head being covered with a red skin, thinly beset with hairs; the hinder part and neck, grey; the scapulars and wing-coverts, pale rufous, margined with brown; the belly, breast, sides, and thighs, ash-colour; the wing-coverts next the body, grey, forming a band on the wing; the greater quills dark brown, with white shafts; the secondaries pale rufous; the tail of a deep ash-colour; the legs and bare part of the thighs, black. The female lays two very large and long eggs at a time; they are much pointed at one end, and freckled with brown. The nest is formed on a tuft upon which much dry grass is accumulated, until it becomes as high as the belly of the bird when standing; this is covered at the top with very fine dried grass, upon which the eggs are laid, and the female stands over them, placing her legs on each side of the heap. [See DEMOISELLE.]

CRAWFISH, or CRAYFISH. (*Astacus fluviatilis.*) A Crustaceous animal of the genus *Astacus*, differing in general appearance but little from the Lobster. They are found in almost every river, and even brook, in England; and their flesh is reckoned cooling and nutritious. Species of this genus are found in all parts of the world. In the mammoth caves of Kentucky, in the United States, a species has been discovered, it is the *Astacus pellucidus* of Tellkampf. Mr.

written a paper on this subject, other curious animal productions ; to which we refer our readers.

ER. (*Certhia.*) A numerous ge- ctivorous birds, distinguished for art by being adapted to live upon and branches of trees, and to feed nsects which infest the bark. The bill is, in some, long and slender ; short and stout, and capable of very hard substances. They ng, slender, arched bill ; wings rounded ; feet rather slender, but toe is long and stout ; and the tail-feathers extend beyond the the splendour and variety of their Creepers rival the Humming- which they are nearly allied in smaller species. These birds heir feet to the perpendicular sur- es, resting upon the stiff quills of and they will even pass round al branch, clinging to its under h their backs to the ground.

MMON CREEPER (*Certhia fami-* ghs only five drams, and next to Wren is the least of the British bill is hooked ; the legs slender ; d claws very long. It breeds in

CREEPER.—(CERTHIA FAMILIARIS.)

es ; and lays from five to seven h-coloured eggs. The head and of the neck are brown, streaked k ; the coverts of the wings are with brown and black ; the quill- dusky, tipped with white, and he breast and belly white ; and ry long.

ALL CREEPER (*Tichodrama mura-* nsidered as one of the rarer Eu- rds, and its principal residence be in Italy and Spain, where it is the frequent ruins, creeping about ated walls in quest of spiders and ects. Its colour is a deep bluish- wing-coverts and middle quill- lack, those nearest the body edged te ; the tail short and black, the rior feathers on each side being th white.

KETS. (*Achetidæ.*) A group of ous insects, belonging to the *gryl-loid* family, which comprises "the crickets of the hearth," the mole-crickets, and the grasshoppers. The Crickets are distinguished from the other members of this family by their long antennæ, and by the comparative smallness of their thighs. Their bodies are short, thick-set, and soft, with the head, corselet, and abdomen of equal length and breadth : the elytra, which do not completely cover the belly, are curved squarely, and are not roof-shaped, as in the locust and grasshopper. In the winged species the wings exceed the elytra, and project even beyond the abdomen, in the form of a sort of bifid tail.

The Cricket's chirping noise, as it is called, is produced by the friction of the bases of

HOUSE CRICKET.
(GRYLLUS DOMESTICUS.)

their elytra, or wing-cases, against each other, these parts being curiously adapted to produce this sound. There are some people to whom the chirp of the DOMESTIC CRICKET is not merely an agreeable sound, but who regard the presence of these active insects as a good omen ! For our own part, while we are ready to admit that they are perfectly harmless, when, issuing from their warm abodes, they skip round the hearth and join in their monotonous song, we confess that "we would much rather have their room than their company."

The FIELD CRICKET (*Acheta campestris*) is much larger, and also rarer, than the preceding : it is also more noisy. It is of a blackish colour, with a large head in proportion to the body, and full prominent eyes : it frequents hot sandy districts, in which it forms its burrow at the side of footpaths, &c., in situations exposed to the sun, to the depth of from six to twelve inches ; and sits at the mouth of it, watching for its prey, which consists of other insects. [See DEINACRIDA : GRYLLUS : MOLE CRICKET.]

CRIMSON UNDERWING [MOTHS]. A name applied by collectors to species of Moths, of the genus *Catocala*.

CREPIDULA. A genus of Molluscous animals, inhabiting an irregularly shaped shell, and often very much flattened ; the inside partly covered with a plate, so as to resemble a half-decked boat. There are many recent species, and some fossil. The inside of the *Crepidula onyx* is of the most brilliant black, while the margin of the shell is tinged with a rich brown, and the little half-deck (if such it may be called) is of a

beautiful white. These shells are often found upon rocks, where they constantly remain, and form a very irregular outline at the circumference, agreeing with the shape

SLIPPER-SHELL.—(CREPIDULA PORCELLANA.)

of the particular part to which they are attached. One species frequently fixes itself upon other living shells, particularly upon the *Purpura*, whose movements it of course follows. The specimen we have here figured is the *Crepidula porcellana*.

CRINOIDEANS. The name given to an extinct class of invertebrate animals, having a radiated, lily-shaped disc, supported on a jointed stem; and having a crustaceous or coriaceous covering. When this stem is cylindrical, the species are termed *Encrinites*; when it is pentagonal, *Pentacrinites*. (See ENCRINITES.)

CRIOCERIS. A genus of Coleopterous insects, belonging to the family *Eupoda*. They live upon aquatic plants, asparagus, &c.; their larvæ feeding upon the same. They have the body soft, short, and swollen; and descend into the earth to become pupæ. One species, *Crioceris Asparagi* (the Asparagus Beetle), is of a blue colour, with the thorax red, and the elytra yellowish-white with blue markings. In its larva state it feeds upon the young sprigs of asparagus, and is sometimes so abundant as to do considerable damage to the plants.

CRIOCERIDIDÆ. A group of oblong leaf-beetles, distinguished by the following characters. The eyes are nearly round and prominent; the antennæ are of moderate length, composed of short, nearly cylindrical or beaded joints, and are implanted before the eyes; the abdomen is narrow and almost cylindrical or square, rounded behind, and much wider than the thorax; and the thighs of the hind legs are often thickened in the middle.

Crioceris trilineata, or Three-lined Leaf-beetle (a North American species), will serve to exemplify the habits of the greater part of the insects of this family. Dr. Harris of Boston, in his truly original work on the Insects of Massachusetts, has described them at length, and it is principally from his work that we are indebted for our notice. This beetle is about one quarter of an inch long, of a rusty buff or nankin-yellow colour, with two black dots on the thorax, and three black stripes on the back, namely, one on the outer side of each wing-cover, *and one* in the middle on the inner edges of *the same*; *the* antennæ (except the first *joint) and the feet* are dusky; the thorax is abruptly narrowed or pinched in middle of each side. When held the fingers, these insects make a sound like the Capricorn-beetles. appear early in June on the leaves potato-vines, having at that time come out of the ground, where they winter in the pupa state. They leaves of the potato, gnawing irregul through them; and in the course of a begin to lay their oblong oval golden eggs, which are glued to the leaves, in of six or eight together. The grubs are hatched in about a fortnight afte are of a dirty yellowish or ashen colour, with a darker coloured head, dark spots on the top of the first ring. are rather short, approaching to drical form, but thickest in the midd have six legs, arranged in pairs bene three first rings. After making a meal upon the leaves of the potat cover themselves with their own filth vent is situated on the upper side of ring, so that their dung falls upo backs, and, by motions of the body for this purpose, is pushed forwards, as it accumulates, towards the head the whole of the back is entirely cove it. This covering shelters their tender bodies from the heat of the s probably serves to secure them fr attacks of their enemies. When it too heavy or too dry, it is thrown replaced again by a fresh coat in the of a few hours. In eating, the grub backwards, never devouring the por the leaf immediately before the he that which lies under it. Their num sometimes very great, and the lea then covered and nearly consumed b filthy insects. When about fifteen d they throw off their loads, creep do plant, and bury themselves in the g Here each one forms for itself a little earth cemented and varnished with gummy fluid discharged from its and when this is done it changes to In about a fortnight more the insect off its pupa skin, breaks open its cell, and crawls out of the ground. beetles come out towards the end or early in August, and lay their eg second brood of grubs. The latter their growth and go into the ground autumn, and remain there in the pup during the winter.

CROCODILE. A Saurian reptile first magnitude, and celebrated fro remotest antiquity for its terror-s aspect and destructive power. We sh now allude to the species which inhab Nile and other large rivers of Afric as we have given the general characte habits of Crocodiles under the head "ALLIGATOR," the species peculiar to the Am continent, that account should be r to, and read in connection with wh lows:—Crocodiles, like the rest of t certæ, are oviparous: they deposit the in the sand or mud near or on the ba the rivers they frequent, and, the

nd, immediately proceed to the the major part are said to be evoured by other animals, as birds, &c. The egg of the com- tic Crocodile is not much larger a goose, but its form is more en the young are first excluded, rs a much larger proportion to an when full grown. The Cro- chiefly on fish, but occasionally t on every animal which hap- xposed to its rapacity; it is fre- with twenty feet long, and the which the upper part of the nd may be reckoned among the ate specimens of Nature's mecha- the full-grown animal it is so hick as easily to repel a musket lower parts it is much thinner, e pliable nature; and the whole f covered with the most regular carved-work. The colour of a Crocodile is blackish-brown yellowish-white beneath; the of the legs and the sides varied ellow, and in some parts tinged in the younger ones the colour r parts is a mixture of brown llow, the under parts being nearly eyes are provided with a nicti- brane, or transparent movable s birds; the mouth is of a vast ricfus or gape having a somewhat tline, and both jaws being fur- h very numerous sharp-pointed hich those about the middle part considerably exceed the rest in em analogous to the canine teeth arous quadrupeds or mammalia. e is attached by its entire mar- nference to the lower jaw, and is ible, as in all true lizards: the xternally closed by two fleshy nostrils form a long narrow chan- only opens anteriorly at the back out; and under the throat there all pouches, which secrete a strong stance. The tail is long, power- laterally compressed form, and above with an upright process, y the gradual approximation of ted crests proceeding from the t of the back: it accordingly serves incipal means of propelling the ugh the water when in pursuit of e legs are very short, but strong ular: the hind feet have only four ch are united towards their base ng web: the two interior toes on he fore-feet, and the interior one nd feet, are destitute of claws.

are also numerous other particulars d with the anatomy of these beings, are very curious and interesting. the articulations of the lower jaw upper, the joint being so far back se almost every incidental observer e that the upper, not the lower, jaw d in opening the mouth: the lateral n the vertebræ, which prevent the of the body, except in a large circle; ous set of ribs designed *exclusively protection of the belly, added by two* broad bones standing on the anterior edge of the pelvis; the construction of the external ears; the apparatus for the protection of the eye, &c. &c.

The Crocodile of Egypt is no longer found except in the upper parts of that country, where the heat is greatest, and the population least numerous. Anciently, the species was common nearly to the outlet of the Nile; and it is stated by Pliny, that they used to pass the winter months buried in the mud, or in a state of torpidity. They are still common enough in the river Senegal, Jaire, &c. It is stated by excellent authorities, that they have occasionally been killed in Upper Egypt measuring thirty feet in length; and a very little reflection upon the muscular power of such a reptile will serve to convince us of its ability to commit the most dreadful ravages on the lives of other creatures. Were not such huge and ferocious animals rendered unwieldy by the length of the body and tail, they might become as dreadful on land as in the water; but when on shore, the difficulty they have in turning or of advancing otherwise than directly forward, enables men and animals readily to escape. In the water, the vast force it can exert by means of the long oar-like tail, amply compensates for want of flexibility, and renders the creature more than a match for any of its enemies. Crocodiles are exclusively carnivorous, and they always prefer their food in a certain state of putrefaction. It may be proper to add, that the Crocodile is supposed to be the *Leviathan* of the Scriptures: few persons, indeed, can have read the book of Job without being struck with the magnificent and terrible description of the attributes of Leviathan, to which alone the characters of the Crocodile correspond. [See GAVIAL, and ALLIGATOR.]

CROPPER. A particular species of Pigeon, which receives its name from a large crop under its beak, which it can either raise or depress at pleasure. [See PIGEON.]

CROSSBILL. (*Loxia.*) A genus of Passerine birds, the distinguishing characters of which are—that the tongue is plain, equal, and whole; and that the beak is large, thick,

CROSSBILL.—(LOXIA CURVIROSTRA.)

short, crooked, and convex both ways. This *singular structure of the beak was considered*

as a mere *lusus naturæ* by Buffon; but, notwithstanding the apparently awkward and useless shape, it is found to be most admirably adapted to their particular habits. The two mandibles, instead of lying in a straight direction, cross each other in a similar manner to a pair of scissors, and which enables them to obtain their food with the greatest facility. They live mostly on the seeds of the cones of the fir; in procuring which they exhibit wonderful instinct, as they fix themselves across the cone, then bring the points of their beak immediately over each other, and insinuate them between the scales, when forcing them laterally, the scales open; and then again bringing the points in contact, they pick out the seed with the utmost ease.

The male of the COMMON CROSSBILL (*Loxia curvirostra*) varies from a beautiful red to orange colour on the head, neck, breast, back, and rump; the wing-coverts rufous brown; quills and tail dusky; tail forked; legs short; claws strong. The female in general is of a dull olive-green on those parts that are red in the male; wings and tail similar to the male, but not so dark. This species inhabits Sweden, Germany, and many other parts of Europe, where it breeds and migrates occasionally in vast flocks into the other parts: it is never known to breed in this country, but sometimes appears in immense numbers, fixing on those spots that abound with firs, for the sake of the seeds, which are its natural food. It is said to do a deal of mischief to orchards by splitting the apples to get at the seeds; and it is so intent when feeding on the cones of the firs (which it holds in its claws like a parrot), that it may be taken without difficulty. In North America and Greenland this bird is very common, and is said to build its nest in the highest parts of the firs, making use of the resinous matter that exudes from them for fixing it to the trees. It is sometimes called the German Parrot.

Another species, called the WHITE-WINGED CROSSBILL (*Loxia leucoptera*), which is somewhat less than a goldfinch, is common in North America. It is said to make its appearance in March, and to build its nest of mud and feathers in May, about half-way up a pine-tree, laying five white eggs speckled with yellow: in November both the old and young disappear, and are supposed to retire farther inland.

CROTALUS. [See RATTLESNAKE.]

CROTOPHAGA, or ANI. A genus of Scansorial birds found in the New World. The Crotophaga Americana, or Keel-bill, is principally an inhabitant of the hotter regions of South America, particularly Brazil, though it is met with also in North America, as well as in several of the West India islands. The general colour of these birds is black, with more or less of metallic reflections; and they have a short, arched bill, very much compressed. They live in flocks; the skirts of woods and the borders of flooded savannahs being their favourite haunts; and their food chiefly consisting of small lizards, insects and seeds. Their wings are short, and their flight feeble; but they are so bold and fearless as scarcely to be alarmed at the ap
of fire-arms; and as they are not reckon
among edible birds, on account of the ra

KEEL-BILL.—(CROTOPHAGA ANI.)

ness of their flesh, they may be said to e
a kind of privileged security. Many
are said to use the same nest, which is b
on the branches of trees, and of a large
there they lay and hatch in concert. T
are observed to breed several times
year, and their eggs are of a bluish-g
colour.

CROW. (*Corvus.*) Under the term C
VIDÆ will be found a brief account of
general characteristics of this gregarious
predatory genus of birds, of which the Ra
may be considered the head. We are
about to speak of the COMMON or CAR
CROW (*Corvus corone*), which in form,
lour, and appetites, so much resembles it
The Carrion Crow is similar to the Ra
in its habits, colour, and external app
ance: length about eighteen inches; brea
three feet. The glossy feathers of the u
plumage have a burnished look, every
on their edges, which are dull, and for
border to each. They live mostly in wo
build their nests in trees; and lay fiv
six eggs. They feed on putrid flesh,
garbage of all sorts; likewise on eggs, sh
fish, worms, and insects.

England is said to produce more bird
this kind than any other country of Eur
In the reign of Henry VIII. they were
numerous, and deemed so injurious to
farmer, that they were regarded as an
worthy of parliamentary redress; and
act was accordingly passed for their dest
tion, in which rooks and choughs were
cluded. Every hamlet was to provide ex
nets for ten years; and, during that sp
the inhabitants were obliged to assemb
certain times, in order to project the m
effectual methods for extirpating them.

The habits of this bird are so admir
pourtrayed by Mr. Waterton, that we d
it no trespass upon the patience of our
ders to quote his observations at consider
length. "This warrior bird," says he,
always held up to public execration.
very word carrion, attached to his na

I not devoutly attached to the established by the wisdom of

Crow is a very early riser; the rook is on the wing, you announcing the approach of loud hollow croaking, from he had resorted the night retires to rest later than the as far as I have been able to tions, I consider him the first in the morning, and the last all our non-migrating diurnal. When the genial voice of upon him for the continuation the Carrion Crow, which up has been wary, shy, and cau- all of a sudden, seems to lose ; and, regardless of personal times makes his nest within a rds of the habitation of man, at once the most conspicuous. To us, who know so little of of birds, this seems a strange ; nor can any penetration of may be possessed enable us to the true meaning of this change ty to boldness, from distance to from wariness to bredlessness, in different species of birds. One ose that they would be more shy at this interesting period; and, of the cat, the rabbit, and the as much as possible the place tirement. The rook will some- a poor and slovenly nest, but the case with the Carrion Crow; variably makes its nest firm and it never builds it in hedges, but nest it in any of our forest trees; ne, it seems to give the preference, to the oak, the spruce fir, and the. The young are hatched naked and remain blind for some days. ssions, no doubt, bestowed the rvice upon this bird, in order to ar and decided distinction between flesh they probably supposed was

not even surpassed by that of the rook itself.

"The Carrion Crow will feed voraciously on ripe cherries; and, in the autumn, he will be seen in the walnut-trees, carrying off from time to time, a few of the nuts. With the exception of these two petty acts of depredation, he does very little injury to man during nine or ten months of the year; and if, in this period, he is to be called over the coals for occasionally throttling an unprotected leveret or a stray partridge, he may fairly meet the accusation by a set-off in his account of millions of noxious insects destroyed by him. However, in the spring of the year, when he has a nest full of young to provide for, and when those young begin to give him broad hints that their stomachs would like something of a more solid and substantial nature than mere worms and caterpillars, his attention to game and poultry is enough to alarm the stoutest-hearted squire and henwife. These personages have long sworn an eternal enmity to him; and he now, in his turn, visits, to their sorrow, the rising hopes of the manor with ominous aspect; and he assaults the broods of the duck-pond, in revenge, as it were, for the many attempts which both squire and henwife have made to rob and strangle him.

"In 1815, I fully satisfied myself of his inordinate partiality for young aquatic poultry. The cook had in her custody a brood of ten ducklings, which had been hatched about a fortnight. Unobserved by any body, I put the old duck and her young ones in a pond, nearly 300 yards from a high fir-tree in which a Carrion Crow had built its nest: it contained five young ones almost fledged. I took my station on the bridge, about 100 yards from the tree. Nine times the parent crows flew to the pond, and brought back a duckling each time to their young. I saved a tenth victim by timely interference. When a young brood is attacked by an enemy, the old duck does nothing to defend it. In lieu of putting herself betwixt it and danger, as the dung-

His loud and varied notes at early dawn, and again at latest eve, are extremely grateful to me; and many an hour of delight do I experience, when, having mounted up to the top of a favourite aged oak which grows on the border of a swamp, I see him chasing the heron and the windhover through the liquid void, till they are lost in the distance. Then, again, how eager is his pursuit!—how loud his croaking!—how inveterate his hostility!—when he has espied a fox stealing away from the hounds, under the covert of some friendly hedge. His compact and well-built figure, too, and the fine jet black of his plumage, are, in my eye, beautifully ornamental to the surrounding sylvan scenery."

The HOODED CROW (*Cervus cornix*) is a bird of passage, which visits England in the beginning of winter, and leaves it with the woodcock. It is found both in the inland and maritime parts of this kingdom; and, in the latter, it feeds on crabs and other shellfish. It is very common in many parts of the Highlands of Scotland, the Hebrides, Orkneys, &c. They build indifferently in all kinds of trees; lay six eggs; have a shriller voice than the common Crow; and are much more mischievous.

CROW SHRIKE. (*Cracticus.*) A genus of birds found in Madagascar, New Holland, &c., of which there are several species.—The BLACK-THROATED CROW SHRIKE (*Cracticus nigrogularis*, Gould) is a handsome species, with a black head, neck, and breast; the under parts, the hinder part of the neck,

CROW SHRIKE
(CRACTICUS NIGROGULARIS.)

shoulders, centre of the wing, white; the tail black, the ends of the feathers white, except the two middle feathers, which are black. It is a native of New South Wales, is usually seen in pairs, and from its active habits and conspicuous pied plumage, forms a striking object among the trees. It feeds on insects and small lizards, but is not satisfied with such trifling prey; its powerful and strongly hooked bill makes it a formidable enemy to young birds, mice, and other small animals, which it soon kills, tears to pieces, and devours on the spot. Mr. Gould, in his invaluable work on the "Birds of Australia," from which our figure is copied, tells us that wounded individuals on being handled inflict severe blows. The nest is like that of a jay.

CRUSTACEA, or CRUSTACEANS. The term applied to those animals which are covered with a soft shell or crust. These *consist of crabs, lobsters*, and many others of a much less complicated structure, and different external form. They are *articulated* animals—that is, those members or limbs consist of segments rings, articulated into each other, or side of which their muscles are attached. The tegumentary skeleton of Crustaceans nerally possesses a considerable degree stony hardness; and, indeed, contains small proportion of carbonate of lime, solid envelope may be looked upon as a of epidermis; for beneath it we find a membrane like the true skin of higher and and at certain times it detaches itself falls off, in the same manner as the dermis of reptiles separates itself from bodies. The way in which they free themselves from their old shell is excessingular. In general, they manage out of it without occasioning the change in its form. When they are denuded, the whole surface of their is extremely soft, and it is not for some that the substance which has been from the pores on the surface of their acquires a hard consistence.

Crustaceous animals present remarphysiological distinctions. They respmeans of *branchiæ*, or branchial plates, ally attached to their feet or to their they have from five to seven pairs of their head is frequently not distinct the trunk, provided with from two to jointed, setaceous antennæ; and two pound movable eyes seated on pedunwhich are sometimes movable, and at fixed; they have a distinct heart, regular circulating system; and their of reproduction are placed either in the or tail. In those genera where the not separated from the trunk, the shcovering envelopes the whole thorax other genera the head is distinct frombody, which is divided into seven segto the lower sides of which the feet tached; these for the most part have consisting of many segments. The vary from ten to fourteen, each having articulations. The two anterior limbs sometimes even three on each side, arvided with forceps; at other times theterminated by simple hooks, and in instances by appendages which fit thesswimming. The mouth has usually mandibles, a *labium* or lip below, and three to five pairs of jaws: these small shaped appendages are not fitted for motion, but, being situated near the assist in the operation of feeding.

Animals of this class live in various tions, suited to their organization; inhabit considerable depths of the others are found on rocky shores, muddy shallows; some, such as crabs inhabit rivers, under stones and beneath while the land-crab takes up its abode inland situations, making periodical neys to the coast in vast numbers, for purpose of depositing its eggs. [See C Some of the Crustacea have the power emitting light in the dark. Others are dowed with the power of not only detaone of their limbs, when seized upon

the faculty of repro-
uth, which, however, is
han the others, until it
nged its crust.—The
Prof. Milne Edwards's
les, and to Prof. Bell's
further information.
altered articles in this

rinus carassius.) A
which, though common
ts of England, is be-
ative fish. It is from
length; very deep and
ch arched. The colour
yellow, with a slight
belly; lateral line
violet; the dorsal fin
a considerable dis-
e of the back towards
is coarse, and conse-
m.

TUCUTUCO.]

s canorus.) This bird,
s have so long been a
nterest, and regarding
y so much speculation
in, is about fourteen
twenty-five in breadth
bill is black and some-
ellow; inside of the
, neck, back, and wing-
rkest on the head and
he forepart of the neck
and belly white, ele-
wavy bars of black;
the inner webs marked
ts; the tail long, the
black, with white spots
shaft; legs short and
rward, two backward;
directed forward or
e; claws white. The
s than the male, and

COLOR CASCEUS.)

colour; the neck and
wny brown, with dusky
g-coverts marked with
ots. The plumage of
issimilar to that of the
ased, indeed, that they

do not throw off the nestling feathers till the second year's moulting.

The Cuckoo is a migratory bird, visiting this country early in spring, and generally quitting it at the commencement of July: its well-known note is usually first heard about the middle of April, and ceases at the end of June. Contrary to the general economy of the feathered creation, it constructs no nest, and never hatches its own eggs; but deposits them in the nests of other birds, as the hedge-sparrow, titlark, water-wagtail, &c., preferring, as it would seem, the first-mentioned. During the time the hedge-sparrow is laying her eggs, which generally occupies four or five days, the Cuckoo contrives to deposit her egg among the rest, leaving the future care of it entirely to the hedge-sparrow. This intrusion often occasions discomposure, for the hedge-sparrow, at intervals, whilst sitting, not only throws out some of her own eggs, but injures others in such a way that they become addled, so that not more than two or three of them are hatched along with that of the Cuckoo; and what is very remarkable, she never throws out or injures the egg of the intruder. When she has disengaged the young Cuckoo and her own offspring from the shell, her young ones, and any of the eggs that remain unhatched, are soon turned out by the young Cuckoo, who then remains in full possession of the nest, and becomes the sole object of the care of its foster parents. The young birds are not previously killed, nor the eggs demolished, but all are left to perish together, either entangled in the bush which contains the nest, or lying on the ground near it. The mode of accomplishing the ejectment is curious: The Cuckoo, very soon after being hatched, and consequently while it is yet blind, contrives with its rump and wings to get the hedge-sparrow, or the egg, upon its back, and making a lodgment for its burden by elevating its elbows, clambers backwards with it up the side of the nest, till it reaches the top, where, resting for a moment, it throws off its load with a jerk, and quite disengages it from the nest; after remaining a short time in this situation, and feeling about with the extremities of its wings, as if to be convinced that the business has been properly executed, it drops into the nest again. Nature seems to have provided, even in the formation of the Cuckoo, for the exercise of this peculiar instinct; for, unlike other newly hatched birds, its back, from the scapulæ downwards, is very broad, with a considerable depression in the middle, as if for the purpose of giving a more secure lodgment to the egg, or the young bird, while the intruder is employed in removing either of them from the nest; when about twelve days old, this cavity is filled up, the back assumes the shape of nestling birds in general, and the disposition for turning out any bird or substance placed in the nest entirely ceases. The smallness of the Cuckoo's egg is another circumstance deserving attention in this surprising transaction; in size and appearance it differs little from the egg of the Skylark and Titlark, though the disparity of the bulk of the

birds is very great: in short, everything conspires, as might be expected, to render perfect the design which is to be accomplished by the seemingly unnatural propensity of this bird.

The growth of the young Cuckoo is extremely rapid: it has a plaintive chirp which is not learned from its foster-parent; and it never acquires the adult state during its stay here. A fierceness of disposition shows itself long before it leaves the nest; for when irritated it assumes the manners of a bird of prey, often making a chuckling noise like a young hawk. When it is sufficiently fledged, it does not long remain the inmate of its supposed parent's domicile; for as its appetites for insect-food increase, it cannot expect to obtain a supply by imitating its little instructor: it therefore takes a final leave of, and seldom offers any violence to, its nurse. All the little birds, however, who consider the young Cuckoo as their enemy, show an inclination to revenge the general cause, and compose the train of his pursuers; but none of them are so active in the chace as the Wryneck, who, from this circumstance, has been erroneously considered by many as the Cuckoo's attendant and provider. The Cuckoo is said to be a fierce pugnacious bird. Its principal food consists of hairy caterpillars, grasshoppers, snails, moths, cockchafers, &c., of which it disgorges the hard parts after digestion, in the same manner as birds of prey: it is also said to eat the eggs of other birds. Mr. White (of Selborne) remarks, however, that Cuckoos cannot be birds of prey, as they have a weak bill and no talons.

Although we have already extended this article to a greater length than was our intention, we cannot refrain from making room for the following remarks by Mr. Jesse: —"There is still a great mystery attached to the natural history of the Cuckoo, and one would willingly, if possible, rescue it from the charge of a want of that natural affection which has been alleged against it. It has been stated that what has been said by a very ancient and sublime writer, concerning the defect of natural affection in the ostrich, may be applied to the Cuckoo. It is now, however, pretty well ascertained that the ostrich only quits her eggs when the sun is so powerful that the additional warmth from her body would be detrimental to them. She therefore returns to them in the cool of the evening. I am persuaded that the more we inquire and search into the economy of nature, so far from finding any defects, we shall have more and more reason to be convinced that not only every bird, but every animal from the highest to the lowest in the scale of creation, is equally well adapted for the purpose for which it was intended." We should have mentioned that it is to *Dr. Edward Jenner*, who first introduced vaccination, that we are indebted for having given the earliest and fullest account of the habits of this singular bird. Many of our readers are doubtless familiar with Logan's fine address to the Cuckoo, *beginning*,

"Hail! beauteous stranger of the grove!"

The Great Spotted Cuckoo. (*Oxylophus glandarius.*) This species inhabits both the south and the north of Europe; and is about the size of a Magpie. The beak is black, and a little bent; head crested; the crest being composed of bluish ash-coloured feathers; from the base of the upper mandible arises a band of black, which passes through the eyes almost to the hinder part of the head, and is broadest in the middle: scapulars, upper wing, and tail-coverts, dark brown, marked with small white and pale cinereous spots; quill-feathers brown; tail wedge-shaped, blackish, and all tipped with white except the two middle feathers: legs and claws black.

The Oriental Cuckoo. (*Eudynamys Orientalis.*) There are several varieties of this species. The first is the size of a pigeon: length about sixteen inches; beak greyish-brown; plumage nearly black, with a green gloss, which in some parts assumes a sort of violet hue. The tail is eight inches long; the legs are of a dusky grey colour; claws black: it is found in the East Indies.—The next variety inhabits Mindanno: it is fourteen inches long; beak black, yellow at the tip; the plumage a blue-black; and the tail generally carried spread.—A third variety is about nine inches in length: beak bright orange; plumage black, glossed with green and violet; tail wedge-shaped; legs reddish-brown; claws nearly black. This species frequents woods, and for the most part flies in small flocks. It is held in veneration by the Mahometans; but by epicures, who have no religious prejudices in its favour, it is esteemed a great delicacy.

The Gilded Cuckoo. (*Chrysococcyx auratus.*) This beautiful little specimen of the Cuckoo tribe is about seven inches in length: the beak is of a greenish brown colour; and the upper parts of the body are of a rich gilded glossy green; on the head are five stripes of white; nearly all the wing-coverts and the second quills have white tips, as likewise the tail-feathers and the two greater tail-coverts; the throat and breast white; the sides and feathers which fall over the knees marked with a few greenish bars; legs grey, covered with white feathers as far as the middle; tail wedge-shaped, above three inches long, and in its natural state spread out like a fan. Le Vaillant, who discovered this species in Southern Africa, remarks that it is undoubtedly the finest bird of the genus.

There are many genera and species of Cuckoos, it being a very extensive family; and a fine collection of them is to be seen in the British Museum. We find it necessary, however, to give but one more, and that is—

The Yellow-billed American Cuckoo (*Coccyzus Americanus*), the description of which we take from Wilson, as follows:—"From the imitative sound of its note, it is known in many parts by the *name* of the *cow-bird;* it is also called in Virginia the *rain-crow*, being observed to be most clamorous immediately before rain. This species arrives in Pennsylvania, from the south,

ut the 22nd of April, and spreads over country, as far at least as Lake Ontario; numerous in the Chickasaw and Chactau ions; and also breeds in the upper parts Georgia; preferring, in all these places, borders of solitary swamps, and apple hards. It leaves us, on its return south-rd, about the middle of September

The singular, I will not say unnatural, duct of the European Cuckoo (*Cuculus orus*), which never constructs a nest for lf, but drops its eggs in those of other ds, and abandons them to their mercy l management, is so universally known, l so proverbial, that the whole tribe of ckoos have, by some inconsiderate people, n stigmatized as destitute of all parental r and affection. Without attempting to ount for this remarkable habit of the ropean species, far less to consider as an r what the wisdom of Heaven has im-nd as a duty upon the species, I will only ark, that the bird now before us builds own nest, hatches its own eggs, and rears own young; and, in conjugal and pa-tal affection, seems nowise behind any of neighbours of the grove.

Early in May they begin to pair, when tinate battles take place among the males. out the 10th of that month they com-ence building. The nest is usually fixed ong the horizontal branches of an apple-; sometimes in a solitary thorn, crab, or ar, in some retired part of the woods. It constructed, with little art, and scarcely concavity, of small sticks and twigs, in-nland with green weeds and blossoms of common maple. On this almost flat , the eggs, usually three or four in num-, are placed; these are of a uniform enish blue colour, and of a size propor-able to that of the bird. While the fe-le is sitting, the male is generally not far tant, and gives the alarm, by his notes, en any person is approaching. The fe-le sits so close, that you may almost reach with your hand, and then precipitates self to the ground, feigning lameness, to w you away from the spot, fluttering, lling her wings, and tumbling over, in manner of the partridge, woodcock, and ny other species. Both parents unite in viding food for the young. This consists, the most part, of caterpillars, particularly h as infest apple-trees. The same insects ntitute the chief part of their own sus-anon. They are accused, and with some tion, of sucking the eggs of other birds, e the crow, the blue jay, and other pil-ers. They also occasionally eat various ds of berries. But, from the circumstance destroying such numbers of very noxious ves, they prove themselves the friends of farmer, and are highly deserving of his tection.

The Yellow-billed Cuckoo is thirteen hes long, and sixteen inches in extent; whole upper parts are of a dark glossy h, or what is usually called a Quaker lour, with greenish silky reflections; from s must, however, be excepted the inner nes of the wings, which are bright *reddish* mmon; the tail *is long, composed of ten* feathers, the two middle ones being of the same colour as the back, the others, which gradually shorten to the exterior ones, are black, largely tipt with white; the two outer ones are scarcely half the length of the middle ones. The whole lower parts are pure white; the feathers covering the thighs being large, like those of the hawk tribe. The legs and feet are light blue, the toes placed two before and two behind, as in the rest of the genus: the bill is long, a little bent, very broad at the base, dusky black above, and yellow below; the eye hazel, feathered close to the eyelid, which is yellow. The female differs little from the male; the four middle tail-feathers in her are of the same uniform drab; and the white, with which the others are tipt, not so pure as in the male. In examining this bird by dissection, the inner membrane of the gizzard, which in many other species is so hard and muscular, in this is extremely lax and soft, capable of great distension; and, what is remarkable, is covered with a growth of fine down, or hair, of a light fawn colour." A specimen of this bird is said to have been found in this country.

CUCKOO-SPIT. [See CERCOPIDÆ.]

CUCULIDÆ. An extensive family of Passerine birds, characterized by having the toes situated two before and two behind; and so named from including as the typical species the well-known Cuckoo. These birds are for the most part inhabitants of the warm climates, and none permanently reside in countries subject to severe winter cold. They have a slightly arched compressed beak, and a long rounded tail; their wings are moderately long, and they fly with rapidity. They feed on insects, worms, and soft fruits, which they procure while leaping from branch to branch, or flitting from tree to tree: when on the ground they walk awkwardly, on account of the shortness of their tarsi. [See CUCKOO.]

CUCULINÆ. The name given to denote that sub-family of the CUCULIDÆ which consists of the genuine Cuckoos.

CULEX: CULICIDÆ. A genus and family of Dipterous or two-winged insects, consisting of the various kinds of *Gnats*. They are distinguished by the length of the proboscis, and their beautifully tufted antennæ. They generally abound in damp situations, their larvæ being inhabitants of the water. [See GNAT: MOSQUITO.]

CURASSOW. (*Crax.*) A genus of Gallinaceous birds, inhabiting various parts of South America. They are nearly as large as a turkey.

The CRESTED CURASSOW. (*Crax alector.*) This bird is nearly three feet in length. The crest, which it can elevate or depress at pleasure, is composed of twisted black feathers, narrow at the base and broad at the tip: the whole of the upper part of the plumage is of a deep shining black colour, reflecting purple and green shades; the tail *is black, generally* tipped with white; the *abdomen* and the inferior tail-coverts are

invariably white. The females have a smaller crest, and their feathers are more dull.

CRESTED CURASSOW. (CRAX GLOBICA.)

They associate in small flocks, and at night roost on high trees: their food consists of maize, rice, bananas, and other fruits. The egg is about the size of that of the turkey, and is of a pure white. Native of Guiana, Mexico, and Brazil.

The RED CURASSOW. (*Crax rubra.*) In size this bird may be compared with the turkey, being about two feet six or eight inches in length. It has a large, strong bill; and a crest composed of twisted and curled feathers, broad at the top, and tipped with black: the front and sides of the head, and the top of the neck, are pure white, the feathers being marked at their tips with a black fringe; the breast and the upper parts of the tail are reddish, the under parts a brighter red than the upper: the feet and the bill are of horn colour. The young of this species are beautifully varied: the sides of the head and top of the neck are barred with black and white; the upper part of the plumage, as well as the tail-feathers, are striated with broad, transverse, red and white bands, margined with a black line: as the bird increases in age these bands gradually disappear, and the feathers of the crest, which are at first straight, begin to twist and curl. In their native country these birds are easily tamed, and readily associate with other poultry; but although they are here common enough in menageries, they have never been known to breed. Temminck, however, says, they have once at least been thoroughly acclimated in Holland, where they were as prolific in their domesticated state as any of our common poultry: and Mr. Bennet, alluding to the same subject, observes, "It may not be too much to expect that the Zoological Society may be successful in perfecting what was then so well begun, and in naturalizing the Curassow as completely as our ancestors have done the equally exotic, and, in their wild state, much less familiar breeds of the Turkey, the Guinea-fowl, and the Peacock." Their flesh is both delicate and nutritious.

CURCULIO: CURCULIONIDÆ. A genus and family of mounted Coleopterous insects, including the diamond beetles and other splendidly coloured species; as well as the corn and nut weevils, and a variety of others *scarcely less destructive* to grain, fruit, and *vegetable products* in general; several of which are given under their respective names. M. Schönherr has published a voluminous work which describes the numerous species. Mr. Walton, F. L. S., has studied the British *Curculionidæ*, and published excellent papers on all the species found in this country.

CURLEW. (*Numenius.*) A Grallatorial bird, belonging to the *Scolopacidæ*, or Snipe tribe, all of which inhabit the vicinity of waters and marshes, and feed upon worms, &c. The COMMON CURLEW (*Numenius arquata*) measures about two feet in length; and in breadth, from tip to tip, above three feet. The bill is about seven inches long, of a regular curve, and blunt at the end: the upper mandible is black, gradually softening into brown towards the base; the under one flesh-coloured. The head, neck, and wing-coverts are streaked with brown; the back and scapulars are nearly black in the middle, edged and deeply indented with light grey. The breast, belly, and lower part of the back are of a dull white, spotted with black; the quill-feathers are black, the inner webs crossed with white; tail barred with black, on a white ground tinged with red: thighs bare about half way above the knees, of a bluish-colour: the toes are thick, and slightly membranous. The female makes her nest upon the ground, in a dry tuft of rushes or grass; and lays four eggs of a greenish cast, spotted with brown.

The Curlew is met with in most parts of Europe. In Britain their summer haunts are the large, heathy, and boggy moors, where they breed; their food consisting of worms, flies, and insects, which they pick out of the soft mossy ground by the marshy pools. In autumn and winter they depart to the sea-side in great numbers, and there subsist upon worms, marine insects, small crabs, snails, &c. This bird is extremely common in most parts of Europe, and it occurs also in several parts of Asia. In the winter it is gregarious, and it is at all times very shy and difficult to approach; but it will soon become familiar. In Scotland, from its cry it is called the "Whaup." [For another species, see WHIMBREL.]

CURSORIUS. This genus of birds inhabits the hot regions of Asia and Africa; one species only, and that very rarely, having been found to visit Europe. The CREAM-COLOURED COURSER (named by Temminck *Cursorius Isabellinus*) is ten inches in length; and has a black, curved beak; the forehead, under parts of the body, back, tail, and wing-coverts of a reddish cream-colour; the latter edged with grey: behind the eyes a double black stripe; the throat and belly whitish; the whole of the lateral tail-feathers black towards the tip, with a small spot of white in the centre of the black: legs yellowish. This rare species is a native of Africa; but with its habits we are unacquainted. Two only are on record as seen in England: one which was shot near St. Albans, in East Kent, the seat of W. Hammond, Esq., Nov. 10. 1785; and another, shot in Charnwood Forest, Leicestershire, Oct. 15. 1827. The former of these was observed to run with incredible swift-

nd at intervals to pick up something the ground; and was so bold as to it difficult to make it rise from the t, in order to take a more secure aim wing. The note was unlike that of own bird. A British-killed specimen desert-loving bird is preserved in the llection in the British Museum.

UCUL. [See TROGON.]

VIROSTRA. [See CROSSBILL.]

HAT. The Wood-pigeon [which see].

TTLE-FISH. (*Octopus.*) A mollus- animal, belonging to the genus *Sepia*, *Cephalopoda*; and sometimes called k-fish. It is of an oblong form, about ches in length, and three and a half in h. The body is somewhat oval; but broadest near the head, and grows r towards the extremity, where it is ly pointed. The head is surrounded eight arms and two feet; the two feet nearly similar in their structure to rms, or tentacula, but considerably r in their dimensions. The head is d from the sac on all sides by a neck. ac is furnished on each side throughout hole length with a narrow fin. The ra are irregularly scattered on the arms

CUTTLE-FISH.—(OCTOPUS.)

feet. The back is strengthened by a plicated calcareous plate, which plate been long known in the shop of the apo- ary under the name *Cuttle-fish bone*, and formerly much prized in medicine as an rbent, but is now chiefly sought after for purpose of polishing the softer metals. superior half, or the one next the head, e longest, rounded at the extremity, and . The inferior portion becomes suddenly ow, and ends in a point. It may be idered as consisting of a dermal plate, ave on the central aspect, having its avity filled up with layers which are ex on their central aspect. The dermal e consists of three different laminæ, ar- ed parallel to one another. The ex- al or dorsal layer is rough on the surface, marked by obscure, concentric arches ards the summit, formed by minute knobs, h become larger towards the base, where r appear in the form of interrupted trans- verse ridges. It is uniform in its structure, and the tubercles possess a polish and hardness equal to porcellaneous shells, although they blacken speedily when put in the fire, and contain a good deal of animal matter. On the central side of this layer is one flexible and transparent, similar to horn, and smooth on the surface. The third layer is destitute of lustre; and, in hardness and structure, resembles mother-of-pearl shells. The term *bone* has been improperly applied to this complicated plate; for this substance, in composition, is exactly similar to shell, and consists of various membranes, hardened by carbonate of lime, without the smallest mixture of phosphate. Under the throat there is a vessel or bladder containing a fluid blacker than ink, which the Cuttle-fish, when pursued by its enemies, ejects in considerable quantities; and this, darkening the water all around, enables it to escape with facility. The most remarkable species of the genus is the *Sepia officinalis*, which is distinguished from the others by its smooth skin. It inhabits the British seas, and although seldom taken, its "bone" is cast ashore on different parts of the coast, from the south of England to the Zetland isles. It is said that the Cuttle-fish is considered a luxury by all classes of the Sandwich islanders, and that when fresh and well cooked it is excellent, being in consistence and flavour not unlike the flesh of a lobster's claw.

The singular habits of the Cuttle-fish did not escape the notice of Mr. C. Darwin, while at the Cape de Verd islands. "I was much interested," says he, "on several occasions, by watching the habits of an Octopus or Cuttle-fish. Although common in the pools of water left by the retiring tide, these animals were not easily caught. By means of their long arms and suckers, they could drag their bodies into very narrow crevices: and when thus fixed, it required great force to remove them. At other times they darted, tail first, with the rapidity of an arrow, from one side of the pool to the other, at the same instant discolouring the water with a dark chestnut-brown ink. These animals also escape detection by a very extraordinary, chameleon-like power of changing their colour" [which Mr. D. minutely describes]. He then adds: "I was much amused by the various arts to escape detection used by one individual, which seemed fully aware that I was watching it. Remaining for a time motionless, it would then stealthily advance an inch or two, like a cat after a mouse; sometimes changing its colour: it thus proceeded, till, having gained a deeper part, it darted away, leaving a dusky train of ink to hide the hole into which it had crawled. . . . That it possesses the power of ejecting water there is no doubt, and it appeared to me certain that it could, moreover, take good aim by directing the tube or siphon on the under side of its body."

CYAMUS, or WHALE LOUSE. A small crustaceous animal belonging to the order *Læmodipoda*. This minute claw-limbed creature, with others allied to it, inhabits the seas of northern and temperate Europe,

WHALE LOUSE. (CYAMUS CETI.)

and the Southern Seas. As its name indicates, it infests different species of Cetacea; living on their rough skin and gnawing it more or less deeply. Some are found congregated on the heads of the Whale; while others are wanderers, and crawl about various parts of their bodies. It is well worthy of notice that such immense creatures, which inhabit the depths of the ocean, are subject to such parasites; nor are they the only petty enemies to whose attacks the Whale is subject. (See WHALE.)

CYCLOPS. A genus of minute Crustaceans, comprising numerous species, some of which belong to fresh-water, while others are marine. The fresh-water species abound in the muddiest and most stagnant pools, and often too in the clearest springs: the marine species are to be found, often in vast numbers, among the sea-weeds, in small pools on the sea-shore; others there are which inhabit the open ocean, where, by the luminous properties they possess, they contribute to its phosphorescence. They take their name from having but one eye. They have all eight or ten legs, and the abdomen is terminated by a bifid tail adapted for swimming. Dr. Baird has monographed the British species.

CYCLOPTERUS. [See LUMP-FISH.]

CYGNUS. [See SWAN.]

CYNIPS: CYNIPIDÆ. A genus and family of Hymenopterous insects, commonly known by the name of *Gall-flies*. These in-

GALL INSECT.—(CYNIPS QUERCUSFOLII.)

sects puncture, with their ovipositor, the surface of the leaves, buds, and stalks of various plants and trees; and they increase the aperture by means of the toothed edge, forming a kind of saw, with which the extremity of this organ is armed. In this aperture they deposit, with the egg, a drop of fluid, which, from its irritating quality, produces different kinds of gall-nuts, according to the species of *Cynips* by which it has been punctured.

The excrescences on the leaves and buds of trees which are called *Galls* are of various shapes: many are spherical; others are hairy or tomentose, the surface emitting numerous fibrous threads; others resemble buds, flowers, &c.; and there are a few which are *flat*: *in most of the species a single gall supports only a single gall-insect*; while others are *polythalamous*, serving for the of many. "Probably," says Mr. W "no insect has been of greater mankind than the *Cynips Gallæ* the galls of which are the common of commerce, growing upon the Q *fectoria* in the Levant, and whic ployed in the manufacture of in galls are of the size of a boy's mar hard and round, with various tub the surface; they contain but a sin bitant, which may often be found terior on breaking the galls. Th resembles some of our English spec reside in globular oak-galls in its undergoing its transformations w gall, leaving a great portion of th consumed. Those galls which are before the insect has escaped; and w sequently contain most astringen are known in trade under the name or blue galls and green galls; t from which the insect has escaped white galls.

CYNTHIA. A genus of Diur dopters, belonging to the Nymphal restrict ourselves to the mention of tish species.

CYNTHIA CARDUI; or P LADY. This species of Butterfly for the irregularity of its appea particular districts. The wings i

PAINTED LADY BUTTERFLY. (CYNTHIA CARDUI.)

are of a brownish yellow colour, with black spots or clouds of variou especially those parts of the upp

UNDER SIDE OF PAINTED LADY BU

next the apices, which are all blac five white spots on each side. On t

...rior wings are of a fine light ...ur, but they become of a deep ...ar the body; and the parts ...tips are of a pale brown, having ...pots, corresponding with those ...r surface; the remaining parts ...d with black, with one large ...early square spot on the sector ...inferior wings are of a pale ...wn, dappled with dark brown ...r equal in size; and near the ...are five ocelliform spots. The ...which feeds on thistles, nettles, ..., is a grayish brown, with yellow ... The chrysalis is grayish, with ...and whitish brown longitudinal

...blue heads of the pasture sea-...ma succisa,)" says the author of ...f a Naturalist, "we occasionally ...the end of the summer, the ...y Butterfly (*Cynthia cardui*); but ...ature that visits us at very un-...ds, and is vivified by causes in-...ond the comprehension of the ..., seeming to require a succession ...of seasons and their change, and ...ng into life we know not how. ...rticularly obvious in the summer ...the two following, which were ...asingly cold and rainy; scarcely ...utterfly appeared. And in the ...f 1818, the season was not less ...a few half-animated creatures ...ed into being; yet this "painted ...ostered into life, and became the ...butterfly of the year: it has, ...t very partially visited us since ... The keenest entomologists, ...ald not much lament the absence ...y, if such cheerless seasons were ...sible to bring it to perfection. ...ago a quantity of earth was ...ting a canal in this county; and ...ng summer, on the herbage that ...om this new soil on the bank, ...ly was found in abundance, ...d not been observed for many ... In some particular seasons we ...f this scabious in bloom, during ...of September and October, giving ...ade of lavender colour to the ...affording now great pleasure to ...ngist, by reason of the multitude ...at resort to it for the honey in ...florets in the plant. Late as ..., I have seen, in some bright ...nides multitudes of bees, flies, ...atures, eleven different species ...erous insects, feeding and ba-...he blue heads and glancing their ...the sunny beam." This species ...ly, found every where; and in ...collection are specimens from ...part of the world.

...PHALUS. [See BABOON.]

...IDÆ. A group of beetles de-...the *Cebrionidæ* on account of ...size; hemispheric, depressed, or ...rather soft bodies, and furcate ...; they are of dull colours, and ...plants in damp situations; and they fly and run with agility. In some species the hind legs are formed for leaping.

CYPRÆA. A genus of univalve shells, called also *Cowries*, remarkable for the brilliancy of their colours, and for the high polish of which they are susceptible. The animal they contain is a Gasteropodus Mollusc; and the shell of one species, the *Cypræa moneta*, is well-known in commerce as the current coin of the natives of Siam, Bengal,

COWRIE.—(CYPRÆA STOLIDA.)

and many parts of Africa: in the latter it is collected by the female negroes, and is thence sent to distant countries. The *Cypræidæ*, or shells of the Cypræa genus, are generally semi-oval, having their mouths placed in their flat part; their spires are not externally visible, the revolutions being performed within the body of the shell; the aperture, or mouth, is a narrow opening, running the entire length of the shell; the lips, which are near each other, are broad, turning inwards, and serrated; and the two ends or extremes on the upper part are very prominent. At one end there appears a wry channel, or opening; the other end has also an opening, but placed perpendicularly. *Cypræidæ* abound both in the old and new world, but their greatest development both in point of size and number of species takes place in warm climates. In the Friendly Islands, permission to wear the *Cypræa aurantia*, or Orange Cowry, as an ornament, is only granted to persons of the highest rank. Mr. Gray, F.R.S., has published an admirable monograph of the Cowries; and the Messrs. Sowerby subsequently figured all the species. They are much prized by collectors.

CYPRINIDÆ. A family of Malacopterygious abdominal fishes, of which there are many genera, the principal being *Cyprinus carpio*, the common Carp. They are for the most part fresh-water fishes; live on

CARP.—(CYPRINUS CARPIO.)

aquatic plants; and are characterized by their small mouth, and by their feeble and generally toothless jaws. They have a scaly body, no adipose fin, a stomach destitute of a *cul de sac*, and no pyloric cæca. The different varieties of Gold and Silver Fish, the Gudgeon, Tench, Bream, Roach, Bleak, Minnow, and many other well-known pond and river fishes, belong to this family.

CYPRIS. A genus of Entomostracous Crustacea, containing numerous species, many of which are British. Their general appearance, to one ignorant of natural his-

CYPRIS VIDUA

tory, is that of a bivalve shell. They are mostly found in fresh or stagnant water, where they sometimes abound in myriads. Delicate though they are, yet there are abundant indications, in strata of different formations, of their existence in a previous condition of the world, and, like shells and some other fossils, they form curious and interesting medals of creation. [See ENTOMOSTRACA.]

CYPRUS BIRD. The Black-cap (*Sylvia atricapilla*), which has received this name from its frequency in the isle of Cyprus. It is by no means uncommon in this country. [See BLACK-CAP.]

CYTHEREA. A genus of marine Mollusca, of which there are numerous species, inhabiting the Indian and Atlantic Oceans. The shell is equivalve, inequilateral, triangular or transverse; ligament on the longest side; four cardinal teeth in one valve, and three in the other. In their beauty and colouring these shells much resemble the *Venus*. One species, the *Cytherea lusoria*, is found in the Chinese seas: it is used by the Japanese and Chinese in certain games, and the interior is painted by them of various colours.

DAB. (*Pleuronectes limanda.*) This species of flat-fish is of a very broad, ovate shape; generally of a uniform pale brown colour on the upper side, and white on the under side; the lateral line is very much curved at the beginning, but afterwards proceeds straight to the tail. It is usually caught along with Plaice and Flounder, from which it is readily distinguished by the roughness of its scaly surface, and its flesh is considered superior to either. It feeds on small fish and crustacea; and is in highest perfection for the table in February, March, and April. It is caught on various parts of our coasts, averages about eight or nine inches in length, and is well known in the London markets.

The LEMON DAB, SMOOTH DAB, or SMEAR DAB (*Pleuronectes lævis*), is much larger than the preceding, more rare, and its flesh is equally esteemed. It approaches nearer to a rhomboid in form than any of the genus; and is a handsomer fish than the common Dab, on account of the various shades of reddish brown and yellow which are seen on its upper side. The body is smooth, and covered with a mucous secretion: the head is very small; the eyes are placed very near each other; and the mouth is full o teeth.

The LONG DAB (*Pleuronectes liman* as its name imports, greatly ever other species in length, approaching, much nearer to that of the sole; the the body being an elongated oval, equally pointed at both ends. It is with harsh scales; is an inhabitant northern seas; and preys on small cr other crustaceous and molluscous an

DACE. (*Cyprinus leuciscus.*) Th or, as it is sometimes called, the I Dart, is a fish of the *Cyprinidæ fam* is rather like the Roach, both in hab appearance, but the former is mor and less plentiful than the latter. found in clear and quiet streams, a upon worms and other soft substanc

DACE.—(CYPRINUS LEUCISCUS

gregarious, extremely vivacious, a the Trout, it will occasionally rise u the day-fly, or at an artificial fly. T of the Dace is small, and the muzzle p the back is slightly elevated, and much forked; the scales are rather the sides and belly silvery, and the form of the body elegantly shaped. the months of April and May the D the highest season. "The Dace," a Yarrell, "is frequently used as bait in trolling, on account of its silvery ness; but where live bait are requ for night hooks, Roach are prefera account of their being more tenac life." Although this fish, in warm w seldom refuses a fly at the surface stream, and thereby affords an exper much diversion; during the cold mo bait must be sunk within three inche bottom.

DACELO. A genus of Kingfishe New Holland. For an account of t are indebted to Mr. Gould. [See KING

DACNIS. A genus of small and Passerine birds inhabiting Mexico. lour of the body is cerulean blue; t head, shoulders, wings, and tail are and it has a sharp, conical bill.

DACOLYTHUS. An appellation to a small fish, a species of the Lon two to three inches long. The broader and flatter than the rest of which is brown with black spots: t two beards on each side of the upp and on the gill-covers are two sharp p It is partial to shallow brooks wit bottoms.

DACTYLOPTERUS. A genus o thopterygious fishes, the generic ch

nal long flat head,
e muzzle; the pro-
with an elongated
rmed with masses of
six branchiostegous
rays numerous, very
a membrane; body
lusted scales. By
se, these fishes dart
ersued, and are able
the air for several
y two species; one,
ages vestibous of Lin-
the Mediterranean;
pterus orientalis of
dian seas. Neither
be confounded with
h, which belongs to

. A name given by
ic genus *Acrogeia*

ISH, SPOTTED, or
ariety of the canine
the foregoing names,
ours all other species
black spots. Its form
ing both of the hound

DOG.

are incredibly stout,
ours in slowry. The
ow claims on us for
rvest your its sagacity
r in the useful con-
kept chiefly as an
ligy, and shows us
the stable.

*s of minute Crusta-
rder *Branchiopoda*;
most interesting of
a pulex (sometimes
Having but one eye),
, is popularly called
reflex, is a favourite
ur head is prolonged
wished with a single
. It is also furnished
ves as oars, to propel
by a series of short
a Daphnia pulex is
y ponds and ditches,
ers in the mornings
s in cloudy weather;
of the water during
They are extremely
the summer time,

they assume a red colour. The structure which allowed to stagnant water gives it the appearance of its being vascularized by blood. In this country, Dr. Baird, F. L. S., has given to the world the history of Daphnia, and its tongueurs; and interesting histories they are.

DART [HOTTON]. A name given by ichthyologists to fishes of the genus *Agrotis*.

DART-SNAKE. [See ACONTIAS.]

DARTER. (*Plotus.*) The Darters are a genus of web-footed birds, of the Pelican tribe, found near the eastern coasts of the tropical parts of America, and on the western coast of tropical Africa. The general form of their bodies is like that of the gulls: they have a long slender bill, broad at the base, but compressed and pointed at the tips: they perch on trees by the sides of lakes, lagoons, and rivers; and, after hovering over the water, they suddenly dart at their finny prey with unerring aim. Their movements are alike rapid and graceful.

"The Darter or Snake Bird. (*Plotus melanogaster*,)" says Wilson, "seems to have derived its name from the singular form of its head and neck, which at a distance might be mistaken for a serpent. In those countries where noxious animals abound, we may readily conceive that the appearance of this bird, extending its slender neck through the foliage of a tree, would tend to startle the wary traveller, whose imagination had portrayed objects of danger lurking in every thicket. Its habits, too, while in the water, have not a little contributed to its name

DARTER, OR SNAKE-BIRD,
(*PLOTUS MELANOGASTER*.)

It generally swims with its body immersed, especially when apprehensive of danger, its long neck extended above the surface, and vibrating in a peculiar manner. The first individual that I saw in Florida was sneaking away, to avoid me, along the shore of a reedy marsh, which was lined with alligators, and the first impression on my mind was, that I beheld a snake, but the recollection of the habits of the bird soon undeceived me. On approaching it, it gradually sank, and *my next view of it was at many fathoms distance, its head merely out of the water.* To pursue these birds at such times is useless,

as they cannot be induced to rise, or even expose their bodies. Wherever the limbs of a tree project over, and dip into the water, there the Darters are sure to be found, these situations being convenient resting-places for the purpose of sunning and preening themselves, and, probably, giving them a better opportunity than when swimming, of observing their finny prey. They crawl from the water upon the limbs, and fix themselves in an upright position, which they maintain in the utmost silence. If there be foliage, or the long moss, they secrete themselves in it in such a manner that they cannot be perceived unless one be close to them. When approached, they drop into the water with such surprising skill, that one is astonished how so large a body can plunge with so little noise, the agitation of the water being apparently not greater than the gliding of an eel.—Formerly the Darter was considered by voyagers as an anomalous production, a monster partaking of the nature of the snake and the duck; and in some ancient charts which I have seen, it is delineated in all the extravagance of fiction."

DARTER-FISH. [See TOXOTUS.]

DASYORNIS. A genus of insectivorous birds, belonging to the great family of Thrushes, and found throughout the greater part of Southern Australia. The BRISTLE-BIRD (*Dasyornis Australis*) inhabits reed-beds and thickets, but owing to its recluse habits is a species familiar to few persons. It carries the tail erect, and threads its way through the thickets with great dexterity; but its powers of flight appear to be very limited. The wings, tail-coverts, and tail, are rufous brown, the latter indistinctly barred with a darker tint; under parts brownish grey; bill brown; legs grayish brown. Another species, of a smaller size, called the LONG-BILLED BRISTLE-BIRD (*Dasyornis longirostris*), is a native of Western Australia, and bears a very close resemblance both in the character and colouring of its plumage to the one above described.

DASYPROCTA. A genus of Rodent Mammalia. In disposition and the nature of their flesh they resemble Hares and Rabbits, which they in some degree represent in the Antilles and hot parts of America. They employ their fore feet to hold up food to their mouth. [See AGOUTI.]

DASYPUS. A genus of Rodent animals, very remarkable among the *Mammalia* for the scaly and hard shell-like armour which, divided into regular compartments, covers their head and body, and often the tail. [See ARMADILLO.]

DAY-FLY. [See EPHEMERA.]

DECAPODA. An order of *Crustacea*, containing those in which we find the highest general organization, the most varied habits, and such as are the most useful to man as food. Their growth is slow, and *their habits are mostly* aquatic; they are *naturally voracious*; and they are armed *with a pair of powerful* claws, by which they seize their food, and convey it to the [illegible] In this order are included Crabs, [illegible] Prawns, Shrimps, &c. [which see]. [illegible] history of the British species, see Dr. [illegible] "Malacostraca," or, as more easily acc[illegible] the elegant work on British Crust[illegible] Professor Bell, in which are figures [illegible] scriptions of all the British species.

DEATH'S-HEAD HAWK-MOT[illegible] remarkable Lepidopterous Insect, bel[illegible] to the family *Sphingidæ*. [See ACHE[illegible] ATROPOS.]

DEATH-WATCH. (*Anobium [illegible] tum.*) Among the popular super[illegible] which the almost general illumina[illegible] modern times has not been able to ob[illegible] as Dr. Shaw very truly observes, the [illegible] of the Death-watch may well be con[illegible] as one of the most predominant; yet [illegible] be allowed to be a very singular c[illegible] stance that an animal so common [illegible] not be more universally known, a[illegible] peculiar noise which it occasionally [illegible] be more universally understood. The [illegible] in question is a small beetle belonging [illegible] timber-boring genus *Anobium*; and t[illegible] pular superstition alluded to is, that [illegible] its beating is heard, it is a sign tha[illegible] one in the house will die before the [illegible] the year. It is chiefly in the advance[illegible] of spring that this little creature com[illegible] its sound, which is no other than the [illegible] signal by which the male and female [illegible] to each other, and which may be con[illegible] as analagous to the call of birds; t[illegible] not owing to the voice of the insect, [illegible] its beating on, or striking, any har[illegible] stance with the shield or fore-part [illegible] head. The prevailing number of [illegible] strokes which it beats is from seven t[illegible] or eleven; and this very circumstance [illegible] perhaps still add to the ominous cha[illegible] which it bears among the vulgar. [illegible] sounds or beats are given in pretty [illegible] succession, and are repeated at sm[illegible] intervals; and in old houses where t[illegible] sects are numerous, may be heard at [illegible] any hour of the day; especially [illegible] weather be warm. The sound exa[illegible] sembles that which may be made by t[illegible] moderately hard with the finger-nail [illegible] table. The insect is of a colour so [illegible] resembling that of decayed wood, [illegible] obscure greyish brown, that it may [illegible] considerable time elude the search [illegible] inquirer. It is about a quarter of a[illegible] in length, and is moderately thick in [illegible] portion, and the wing-shells are m[illegible] with numerous irregular variegation[illegible] lighter cast than the ground-colour. [illegible] singular that this insect may so far be [illegible] liarized as to be made to beat cerem[illegible] by taking it out of its confinement [illegible] beating on a table or board, when i[illegible] readily answer the noise, and will con[illegible] to beat as often as required. I cannot [illegible] clude this slight account of the Death-[illegible] says our author, without quoting a pa[illegible] from that celebrated work the Pseud[illegible] Epidemica of the learned Sir Thomas B[illegible] who on this subject thus expresses hi[illegible] "He that could eradicate this error

...ds of the people would save from ...old event the meticulous heads of ...nd grandmothers." In their larva ...e insects greatly injure old furni... perforating numerous small round ...

(*Cervus.*) Among the various ...which embellish the forests and ...the solitudes of nature, none are ...to the cervine race. These well-...uscluants are distinguished from ...ps by their horns, which are com... ...bony substances, caduceus, or fall-...nually, and again renewed of a ...than in the preceding year. The ...hese is various. Sometimes they

SKULL OF STAG.

...ain broad palms, which send out ...gs around their outer edges; some-...y divide fantastically into branches, ...which project over the forehead, ...thers are reared upward in the air, ...may be so reclined backwards, that ...al seems almost forced to carry its ...a stiff, erect posture; yet, in what-...y they grow, they appear to give an ...ncline to the animal. It may, then, ...; in general terms, be said, that the ...ance of their form, the lightness of ...ulous, their size, their strength, their ...; and the extraordinary develop-...those branching horns, which seem ...much intended for ornament as de-...l contributes towards placing them ...ermost rank of quadrupeds.

DEER, or STAG. (*Cervus elaphus.*) ...we speak of the habits &c. of this ...imal, it will be well to enter into a ...ticulars relative to its distinguishing ...istic, the horns. The first year the ...properly no horns, but only a kind ...ous excrescence, short, rough, and ...with a thin hairy skin; the second ...horns are single and straight; the ...er they have two antlers; the fourth, ...he fifth, four; and the sixth, five. ...rtical at the sixth year, the antlers ...always increase; and though the ...may amount to six or seven on each ...Stag's age is then estimated rather ...e size and the thickness of the branch ...ndor shoots, than from their number.

The proportional length, direction, and curvature of the antlers vary; and it often happens that there is one more or less on the

RED DEER—MALE.—(CERVUS ELAPHUS.)

one side than on the other; the horns also become larger, the superficial furrows more marked, and the burr is more projecting. Notwithstanding their magnitude, these horns are annually shed in the spring of the year, and succeeded by new ones. Of the old horns, which are of a solid, firm texture, a variety of domestic articles are made; but while young they are remarkably soft and

RED DEER.—FEMALE AND YOUNG (CERVUS ELAPHUS.)

tender; and the animal, as if conscious of its want of power, instantly retires from the rest of the herd, and, hiding itself in thickets and unfrequented places, ventures abroad for the sake of pasture only at night. It is nearly three months before the new horns attain their full growth and solidity; and then, by rubbing them against the boughs of trees, they at length clear them of that covering of skin, which had before contributed to their growth and nourishment. "The growth of the horns," says Mr Bell, "is an astonishing instance of the rapidity of the production of bone under particular circumstances, and is certainly unparalleled in its extent in so short a period of time. A full grown Stag's horn probably weighs

twenty-four pounds; and the whole of this immense mass of true bone is produced in about ten weeks. During its growth the branches of the external carotid arteries, which perform the office of secreting this new bone, are considerably enlarged, for the purpose of conveying so large a supply of blood as is necessary for this rapid formation. These vessels extend over the whole surface of the horn as it grows, and the horn itself is at first soft and extremely vascular, so that a slight injury, and even merely pricking it, produces a flow of blood from the wound. It is also protected at this time with a soft, short, hairy or downy coat, which is termed the velvet; and hence the horns are said to be in 'the velvet' during their growth."

The Stag is supposed to have been originally introduced into our own island from France, where it is very common: but it has been in a great degree expelled from most parts of this kingdom to make way for the common, or Fallow Deer, the venison of which is far superior to that of the Red Deer, and the animal itself of a more manageable and placid disposition. The Stag has a fine eye, an acute smell, and a good ear. When listening, he raises his head and erects his ears. When going into a coppice or other half-covered place, he stops to look round him on all sides, and scents the wind, to discover if any object be near that might disturb him. Though a simple, he is a curious and crafty animal. When hissed or called to from a distance, he stops short, and looks steadfastly, and, with a kind of admiration, at horses or men; and if the latter have neither arms nor dogs, he moves on without betraying any symptoms of alarm. He eats slowly; and after his stomach is full, he lies down and ruminates at leisure.

In Dr. A. T. Thomson's notes to an edition of "The Seasons," by his celebrated namesake, we find appended to line 454, (*Autumn*,)—

> "The big round tears run down his dappled face;"

the following very apposite remarks:—"This supposed peculiarity of the Stag to shed tears is noticed by several poets, but by none so strikingly as by Shakspere* and our author: but, indeed, it is not wonderful that it was the popular belief before it was noticed by poets, for the eyes of the Stag, passages. It is composed of a fu skin, and is capable of being ope shut at the pleasure of the anim furnished at the bottom with a glan secretes an oily, viscous substanc colour and consistence of the wa ears, and which hardens and becom when exposed to the air. The pre tion of this organ is unknown, many conjectures have been offere planation of it: and there can be that it serves some important purpo economy of the animal. The m moving edges of the sinus have b taken by general observers and t for precious tears let fall over tha the eyelids; and, in our love for th tic, we almost regret to be undeceiv

In winter and spring this anim ever drinks, the dews and tender being sufficient to satisfy his thi during the parching heats of summ only frequents the brooks and spri searches for deep water wherein and refresh himself. He swims wi ease and strength, particularly wh in good condition, his fat contributi buoyancy. His voice is stronger and more tremulous, in proportio advances in age; and during the season it is really fearful. The c *hind*, or female, is not so loud as th male, and she is never excited but apprehensions for the safety either or her young. Like all the rest of tribe, except the Elk, the female is of horns; she is also more feeble a for hunting than the male. The season is in August; the time of ge between eight and nine months; seldom produces more than one at The usual season of parturition May, during which these animals assiduous in concealing and tend young; nor is this a needless pr since almost every animal of the c feline kind is then an active enem unnatural as it may seem, the Stag is also one of their most dangerous a At this season, therefore, the courag male seems to be transferred to the for she resolutely defends her offspr if pursued by the hunter, exposes h great apparent danger, for the pu diverting his attention from the her parental regard. The Call (t by which the young of this animal

...n in the Highlands, is one capable ...g all the manly ardour and energy ... and manhood, whilst all the powers ...body and mind are called into action. ...sty, graceful, and magnificent bear- ...the animal, his sagacity in evading ...ingenuity of the hunter, or deer stalker, ... courage when at bay, add greatly to ...ssure of the chase. In stalking deer, ...mal is generally shot; but if he is ...ounded, and has power to fly, then ... are slipped to the pursuit. But, in ...mes, the chief reliance for pulling ...ling the deer, was in the dogs; and ...ftness and courage of their hounds ...e pride of nobles and kings."

...food of Stags varies according to the ... In autumn they search for the buds ...on shrubs, the flowers of broom or ...the leaves of brambles, &c. During ...re of winter they feed on the bark ...ous of trees; and in mild weather they ... in the fields. In the present culti- ...state of this country, Stags are almost ...wn in their wild, natural condition; ...uch as remain amongst us are kept ...the name of Red Deer, together with ...Fallow Deer; but their excessive ferocity ... the rutting season, and the coarseness ...r flesh, have contributed in a great ...re to effect their almost total exter- ...ion. In Scotland, however, they still ...a considerable numbers; and though ... deemed necessary to abolish Stag- ...g by act of parliament, in consequence ...multitudinous gatherings of the clans, ...his pretext, being often made subser- ...ve political purposes, "a Stag-hunt is ...e the present day the scene of much ... excitement and profuse hospitality ...ich this noble sport was characterized ...s of yore."

...e Stag is an ancient denizen of the ... of this country. From the most

the growth of the bosses, or frontal protu- berances, on which the horns are afterwards developed, which during the first year are merely rounded knobs, from whence he takes the name of KNOBBER. In the second year they are longer and pointed, and are called dags, and the animal has now the name of BROCKET. In the third year, the first, or *brow antler*, has made its appearance, and the Deer becomes a SPAYAD. In the fourth, the *bez-antler* is added, and he is then termed a STAGGARD. He is a STAG in the fifth year, when the third antler, or *royal*, appears: and in the sixth, the commencement of the *sur-royal*, or crown, is formed; when he takes the name of HART, which name he retains through life. At this time he is called a Hart or Stag of ten, probably because the branches, including the sur-royal, frequently amount to that number. After the seventh year he is said to be *crochet*, or *palmed*, or *crowned*, according to the number of branches composing the sur-royal. The female is a *Calf* in the first year, a *Brocket's sister* in the second, and in the third, and ever afterwards, a *Hind*." —*Bell's British Quadrupeds.*

VIRGINIAN DEER. (*Cervus Virginianus.*) This species is found in vast herds in the northern parts of America, and is an animal of great importance to the Indian natives. They are of a light brown colour, and about the size of the Fallow Deer, but their tails are longer. Their horns are slender, bend greatly forwards, and have numerous branches on the interior sides, but no brow antlers. They are of a restless and wandering disposition, and in hard winters are observed to feed much on the different species of *usnea* or string moss, which hangs from the trees: they are also fond of resorting to places impregnated with salt, and vulgarly called *salt-licks*; and it is at these favourite haunts that the hunters generally

the species being in the collection of the British Museum, and many of them are to be seen alive in the Gardens of the Zoological Society, and used to adorn the noble menagerie of the Earl of Derby (President of that Society), at Knowsley, Lancashire.

DEINACRIDA. A genus of Orthoptera belonging to the *Gryllidæ* or Cricket tribe. Our figure is copied from the one that accompanies Mr. White's description in the Zoology of the Voyage of H. M. SS. Erebus and Terror. Mr. W. Stephenson, speaking of it in his remarks on the entomology of New Zealand, says, "It is a peculiarly formidable insect, found in old trees, secreting

NEW ZEALAND GRAND CRICKET. (DEINACRIDA HETERACANTHA.)

itself in rents and crevices. It is an abundant species in New Zealand, and is carnivorous. It is called by the Maories *Weta*." The male is distinguished from the other sex (here figured) by its enormous head, the bite of which is very severe. Both sexes are apterous, the female being very prolific in ova. Mr. Stephenson believes there are more than one species of this genus. It is allied to the genus *Anastatomus* of Mr. G. R. Gray.

DELPHINIDÆ. The Dolphin tribe, a family of cetaceous animals, characterized by the moderate size of the head, and usually by the presence of teeth in both jaws. It includes, with the Dolphin and Porpoise, many animals which are ordinarily called Whales; a considerable number of which occasionally visit the northern coasts of Britain. They are in general voracious feeders; and their flesh is for the most part rank, oily, and unwholesome. [See WHALE.]

DEMOISELLE. (*Anthropoides Virgo.*) The Demoiselle, or Numidian Crane, is remarkable for the grace and symmetry of its form, and the elegance of its deportment. It measures three feet three inches in length; and has a beak two inches and a half long, the base of which is greenish and the tip red: the irides are crimson: the crown of the head is cinereous; the rest of the head, and neck, black: the feathers of the breast are *long and drooping*: the under parts of the *body, from the breast*, the back, and the tail, are bluish ash; the latter and the quills are tipped with black; and the legs are black. This grallatorial bird is a native of many parts of Asia and Africa; and is to be met with along the whole of the southern and eastern shores of the Mediterranean. It delights in damp and marshy places, frequenting those parts in search of small fishes, frogs, &c., which are its favourite food. It is easily domesticated.

There is another species, called the CROWNED DEMOISELLE (*Anthropoides Pavonia*), which is less than the one above described, and about the size of the common heron. The crown of the head is covered with soft black feathers, like velvet; on the hind part

CROWNED DEMOISELLE (ANTHROPOIDES PAVONIA.)

is a tuft of stiff hair, which spreads out on all sides in a globular form; this is four inches in length, and of a reddish brown colour: the sides of the head are bare of feathers; and on each side of the throat hangs a kind of wattle. The general colour of the bird is a bluish ash: the feathers on the fore part of the neck are very long, and hang over the breast; wing-coverts white; the greater ones incline to rufous, and those farthest from the body to black: the greater quills and tail are black, and the secondaries chestnut. The female is black where the male is blue-ash, and the wattles on the throat are wanting. This bird is a tame species, and, like the preceding, is often kept in aviaries; it runs very fast; flies strong, and is able to keep on the wing for a long time together. Another species, the STANLEY DEMOISELLE (*Anthropoides paradisea*), is even more elegant than either of the preceding; it is of a light ashy blue, and in proportion, colour, length of feathers, and grace, is worthy of all admiration.

DENDROCOLAPTES, or HOOKED-BILLED CREEPERS. A genus of Tenuirostral Birds, with the bill generally long and curved, the tail feathers stiff and pointed to assist the birds in climbing; the claws are long and curved. There are several species, natives of South America; their general colour is brown, with grey mixtures, and in most of the species there are whitish lines or spots about the head and neck: these birds are marked features in the Fauna of South America. [See FURNARIUS.]

DENDROLAGUS, or TREE-KANGAROO. A genus of Marsupialian animals

ging to the Kangaroo family. Two
s, *Dendrolagus ursinus* and *inustus*
er, were discovered by M. S. Muller, in
Guinea. These were found at Triton
, and they also inhabit the interior
e country. They are arboreal in their
ts, climbing trees with the utmost fa-
y. The tail is considerably elongated,

TREE KANGAROO.—(DENDROLAGUS.)

e one species (the *D. inustus*) of nearly
thickness throughout. The *D. ursinus*
a deep blackish brown; the *D. inustus*
Now that New Guinea is taken into
mination of the British, specimens and
rticulars of this interesting genus may
be looked for.

NDROPHYLLIA. The name given
nus of Polypi, or Madrepores, of co-
e structure. They are of arborescent
, the stem sending out branches, instead
aining simply columnar; and these
es again subdividing. The whole
are is covered with a gelatinous or
substance, which, although it has no
communication with the stomach,
to constitute the animal, of which the
es are only subordinate parts.

NDROSAURA, or TREE LIZARDS.
me of a tribe of Reptiles, containing
haemeleons, and used by Mr. Gray in
earliest Descriptive Catalogue of the
ds in the British Museum. The scales
belly, of the side, and of the back, are
lar, and in circular bands; the tongue
m-like and elongate, and very exten-
The eyes are globular, very mobile,
ed with a circular lid pierced with a
central hole. The toes are formed
two grasping opposable groups, which
m admirably for living on trees. (See
ELEON.)

NTIROSTRES. The name of a tribe
ds, characterized by having a notch
oth-like process on each side of the
n of the upper mandible. They ma-
rapacious habits, and prey on smaller
weaker birds. The *Butcher-bird* will
as an example of this tribe.

RMESTES: DERMESTIDÆ. A
and family of Coleopterous insects, the
e of which are clavated and *perfo-*
transversely. The *larvæ or grubs of this*
devour dead bodies, skins, leather, and
almost any animal substance, and are exceedingly destructive to books and furniture. "Although obnoxious in these respects, the insects of this family are of infinite service in the economy of nature, by causing the rapid decomposition of animal matter into a substance fitted for the improvement of the soil, and by their labours, united with those of the Silphæ, Necrophori, &c., destroying such portions of these remains as are left untouched by the Flesh-flies, which only consume the soft portions of the carcasses. Like the perfect insects, their larvæ are seldom observed upon the surface of the matters which they attack."—*Westwood.* This gentleman further observes (in a note), "In some of the Egyptian mummies lately opened, a great number of dead specimens of several species of Dermestes have been discovered in the interior of the body, together with a number of their larvæ, also dead: hence, from the circumstance of these larvæ being found dead in a situation which appears at one time to have been congenial to them, I am induced to think that these insects must have found their way into the body previous to the final operation of embalmment, whereby they were destroyed."

The complete insects are mostly of a lengthened oval shape, and have a habit of withdrawing the head beneath the thorax when handled.—One of the most familiar species is the *Dermestes lardarius*, or Bacon-beetle, which is about a third of an inch in length, and of a dusky brown colour, with the upper half of the wing shells whitish or ash-coloured, and marked with black spots.—Another species, seen in almost every house during the spring and early part of the summer, is the *Attagenus Pellio*. It measures scarcely a quarter of an inch in length, and is of a very dark brown or blackish colour, with a white speck on the middle of each wing-shell.

BACON BEETLE. (DERMESTES LARDARIUS.)

DESMAN, or MUSK-RAT. (*Mygale moschata.*) An insectivorous animal, aquatic in all its habits, and nearly equal in size to

DESMAN, AND FORE-FOOT. (MYGALE MOSCHATA.)

the Hedgehog. Its muzzle is elongated into a small, very flexible proboscis, which

is constantly in motion. It has a long tail, scaly and flattened at the sides; membranous feet; eyes very small; and no external ears. This animal is very common along the rivers and lakes of Southern Russia, where it feeds on worms, the larvæ of insects, and particularly on leeches, which it easily withdraws from the mud by means of its flexible proboscis. It never comes voluntarily on shore, but is often taken in the nets of the fishermen. Its burrow, excavated in a bank, commences under water, and ascends to above the level of the highest floods. Under the tail of the Desman are two small follicles containing a kind of unctuous substance, of a strong musky odour, from which the name of *Musk-rat* is given to it.

DEW [MOTHS]. A name given by collectors to Moths of the genus *Setina*.

DIADEM SPIDER. (*Epeira diadema.*) This spider, so common in the autumn, belongs to Walckenaer's genus Epeira. Its body, when full grown, is nearly as large as a hazel nut, is of a deep chestnut brown colour, and

DIADEM SPIDER.—(EPEIRA DIADEMA.)

the abdomen beautifully marked by a longitudinal series of round milk-white spots, crossed by others of a similar appearance, so as to represent in some degree the pattern of a small diadem. It is chiefly seen during the autumnal season in our gardens, where, in some convenient spot or shelter, it forms a large, round, close web of yellow silk, in which it deposits its eggs, guarding this web with a secondary one of a looser texture. The young are hatched in the ensuing May, the parent insects dying towards the close of autumn. At the tip of the abdomen are placed five papillæ or teats, through which the spider draws its thread. The eyes, which are situated on the upper part of the thorax, are eight in number, placed at a small distance from each other. The fangs with which the animal wounds its prey are strong, curved, sharp-pointed, and each furnished on the inside, near the tip, with a small oblong hole or slit, through which is discharged a poisonous fluid into the wound made by the point itself. The feet are of a highly curious structure; the two claws with which each is terminated being furnished on its under side with several parallel processes resembling the teeth of a comb, and enabling the spider to manage with the utmost facility the threads in its web, &c. [See SPIDER.]

DIAMOND BEETLE. (*Entimus.*) This *splendid Coleopterous* insect belongs to the family *Curculionidæ*, and contains three species. It is very abundant in parts of South America. It is often magnifying glass of no great power

DIAMOND BEETLE.—(ENTIMUS [illegible])

into a very pleasing toy to amuse people. There are small species of *Nitidæ* in our own island, however, scarcely less brilliant when magnified a good light, and with sufficient po

DIAPERIS. A genus of Col insects. [See TAXICORNES.]

DICÆUM. A genus of Tr Birds, allied to the CREEPERS: th use their tails as these birds do; are generally brilliant in colour more or less of scarlet in their Different species are found in As Islands, and also in Australia.

DICOTYLES, or PECCARY, of Quadrupeds allied to Swine. CARY.]

DICRONOCEPHALUS. A Coleoptera belonging to the fam *niadæ*, described by Mr. Hope. which is the only sex at present remarkable for the two horns on which are bent up. The only know *Dicronocephalus Wallichii*, is a

DR. WALLICH'S BEETLE. (DICRONOCEPHALUS WALLICH

Nepál, having been found by Dr when botanizing among the mountains. It is of a yellowish gr and its general form will be bette the accompanying cut than by an tion. It is at present very rare tions (there is one, however, in th Museum); but, like its congeners,

(Opheomorphidæ, from Ophis, and Morphe and Phanêsis, from the Eastern title the active resemblance of Indian ers and reptiles will make these pretty l singular insects more common.

DELPHIDÆ. A family of quadrupeds ging to the order Marsupialia, and ming of the genus Didelphis, or Opossum. y are restricted to America. They are ecialized by having ten incisors above eight below, the canines being one on side of either jaw, and the molars seven. four last, or true molars, being covered h sharp tubercles. The limbs are short; feet plantigrade; and the tail, which ber on each side, armed with sharp, g, carpal claws, except the lower toe or th on the hinder feet, which is opposable dactyle of a quoll. The tail, except at ase, is scaly and naked; and it is sometimes or less prehensile. In some species ouch is evidently wanting, being indicated only by a slight fold of the skin. [See SUM.]

DICEROUS. A genus of birds found e South Sea Islands. [See GRACULI-E.]

DUS. A genus of birds now extinct. DODO.]

MERA. A section of the order Homoa, comprising much smaller insects those included in the section Trimera. distinguished from them by having only ints in the tarsi; with antennæ longer the head, and composed of from six to fifteen joints; whilst they differ from Heteroptera by the winged individuals ing four wings, the anterior being nearly of the same membranous texture posterior. The section contains of the ies Psyllida, Aphidæ, and Aleyrodidæ.

MYARIA. The name given to the st order of Conchifera, or Bivalve Shells. ntains a great number of families, which be grouped into four divisions, arising y from the shape of the foot of its numerous inhabitant, but chiefly from the s or less perfect manner in which the es close upon each other. Sometimes name Homostoma is given to this order.

NGO, or AUSTRALIAN DOG. This on of the canine race has a very wolf- appearance. The ears are short and ; the tail rather bushy; the hair, which

DOG (DINGO AUSTRALASIÆ AUSTRALASIÆ.)

s a reddish dun colour, is long, thick, and ight. This dog is extremely fierce, and

fear the same sort of snarling and howling voice as the larger kind of dogs have in general; though by some it has been occasionally said neither to bark nor growl. There is good reason, however, to believe that the Dingo is the descendant of a tame race domesticated, which has returned to its wild state.

DOPHONS. A genus of birds allied to the Gralla, now only found in a small state in New Zealand, whence many specimens have been sent to this country. One of the species must have been at least fourteen feet high, and it is believed that some specimens may have been still higher. The space will not allow of our entering into the interesting details of comparative anatomy which Professor Owen has given in the Additional Remarks to the Transactions of the Zoological Society,—to which the reader is referred. It is known to the natives by the name of Moa.

DINOTHERIUM. A genus of extinct herbivorous quadrupeds, of gigantic dimensions: but as only fragments of the huge creatures have yet been found, the size of the entire animal cannot be accurately given.

SKULL OF DINOTHERIUM GIGANTEUM.

A skull of one was discovered at Eppelsheim in Hesse Darmstadt, in 1836, measuring about four feet in length and three in breadth, from which, according to the calculations of Cuvier and Kaup, the Dinotherium is supposed to have attained the length of thirteen feet. Dr. Buckland, who paid great attention to the structure of this immense specimen of extinct Mammalia, is decidedly of opinion that it was an aquatic animal. "It is undoubtedly impossible," he observes, "that a lower jaw, twenty-four feet long, loaded with such heavy tusks at its extremity, could have been otherwise than cumbrous and inconvenient to the quadruped living on dry land. To such disadvantages would have attended this structure in a large animal destined to live in water; and, in aquatic habits of the family of Tapirs, to which the Dinotherium was most nearly allied, similar it probable that, like them, it was an inhabitant of fresh-water lakes and rivers," &c. The Doctor subsequently

says," Professor Kaup and Dr. Klipstein have recently published a description and figures of this head, in which they state that the very remarkable form and dispositions of the hinder part of the skull show it to have been connected with muscles of extraordinary power, to give that kind of movement to the head which would admit of the peculiar action of the tusks in digging into and tearing up the earth. They further observe that my conjectures respecting the aquatic habits of this animal are confirmed by approximations in the form of the occipital bone to the occiput of *Cetacea*; the Dinotherium, in this structure, affording a new and important link between the *Cetacea* and the *Pachydermata*."

DIODON. A remarkable genus of *Plectognathi*, or bony fishes with soldered jaws.

The DIODON HYSTRIX, commonly termed the Sea-Porcupine, is of a nearly spherical form, sometimes measuring not less than two feet in length; but it possesses the power of inflating or contracting itself at pleasure by means of an internal skin or membrane situated beneath the exterior or spiny covering. Its colour is a pale grey, the back being of a somewhat deeper cast; and the whole body is marked at the base of each spine by a round black spot; the fins being also spotted. When taken by a line and hook, it inflates its body and elevates its spines to the highest possible degree, as if endeavouring to wound in all directions; nor can it be touched without danger until it is dead. It is a native of the Indian and American seas; and its flesh is coarse and worthless.

The OBLONG DIODON (*Diodon atinga*) differs from the former in being of a more lengthened shape, and in having the spines rather round than triangular. Its general colour is grey, deeper on the back, and with a cast of pink on the lower parts like the Diodon Hystrix: it is marked with numerous round black spots; but it is only from twelve to fifteen inches in length. Unless very carefully cleaned, it is dangerous to eat it; for if not absolutely poisonous, the flesh is highly unwholesome. It is a native of the Indian and American seas.

Besides the above, there is the ROUND DIODON (*Diodon orbicularis*), about nine or ten inches in length; which is considered a poisonous fish: PLUMIER'S DIODON (*Diodon Plumieri*), a species very nearly allied to the Oblong Diodon: and the PATCHED DIODON (*Diodon liturosus*), which inclines to a globular shape, and is marked on each side of the body with an oval patch and two transverse ones; and on the back a round spot encircling the dorsal fin: spines white with brown tips, and all the fins greenish yellow.

"One day," says Mr. Darwin (while on the coast of Brazil), "I was amused by watching the habits of a Diodon, which was caught swimming near the shore. This fish is well known to possess the singular power *of distending itself* into a nearly spherical *form. After having* been taken out of water for a short time, and then in it, a considerable quan and air was absorbed by perhaps likewise by the be The process is effected by t air is swallowed, and is th cavity of the body, its p vented by a muscular con externally visible; but t served, entered in a stra mouth, which was wide ope this latter action must the suction. The skin about much looser than that of during the inflation, the comes far more distended and the fish, in consequen back downwards. Cuvie the Diodon, in this positio but not only can it thus straight line, but likewise to either side. This lat effected solely by the ai fins, the tail being collap From the body being bu much air, the branchial o of water: but a stream mouth constantly flowed t

"The fish, having rema tended state for a short ti pelled the air and water force from the branchia mouth. It could emit, at the water; and it appear bable, that this fluid is ta the sake of regulating its This Diodon possessed seve fence. It could give a sev eject water from its mouth at the same time it made a the movement of its jaws. of its body, the papillæ, wi is covered, became erect a the most curious circumst emitted from the skin o handled, a most beautiful fibrous secretion, which s paper in so curious a man is retained with all its b present day.

DIOMEDEA. A genus o [See ALBATROSS.]

DIOPSIS, or TELESC very singular genus of Dipt markable for the enormou dicels on which the eyes are

TELESCOPE F (DIOPSIS MACULIPEN

&c., tend to prevent the water from becoming putrid, by devouring the decayed animal and vegetable matter it contains. The maggots of some flies live in toadstools and similar excrescences growing on trees; those of others in rotten wood and bark. And, finally, many lay their eggs on caterpillars, and on various other larvæ, within the bodies of which the maggots hatched from these eggs live till they destroy their victims. Besides performing their various appointed tasks in the economy of nature—flies, and other insects, subserve another highly important purpose, for which an allwise Providence has designed them, namely, that of furnishing food to numerous other animals. Not to mention the various kinds of insectivorous quadrupeds, many birds live partly or entirely on insects. The finest song-birds, nightingales and thrushes, feast with the highest relish on maggots of all kinds, as well as on flies and other insects, while warblers, swallows, &c. &c., devour these two-winged insects in great numbers. —The works of Meigen, Wiedemann, Macquart, and Robineau Desvoidy, are the great authorities on this very numerous and every where distributed order of insects.

DIPUS. [See JERBOA.]

DIRT-DAUBER. The name given in the United States to a species of Hymenopterous insect: for the account of the interesting habits of which see PELOPŒUS.

DIVERS. (*Colymbidæ.*) A genus of aquatic birds, thus described by Bewick:—"The bill is strong, straight, and pointed: the upper mandible longest; the edges of each bending inwards: nostrils linear, the upper part divided by a small cutaneous appendage: tongue long, pointed, and serrated on each side near the base: thighs placed far backward: legs thin and flat, and extended horizontally: toes four in number; the exterior the longest; the back one small, and joined to the interior by a thin membrane: tail short, consisting of twenty feathers. These birds are broad, flat, and long-bodied, and swim in a squat position on the water."

The GREAT NORTHERN DIVER. (*Colymbus glacialis*) measures upwards of three feet in length, and four feet six inches in breadth. The bill is black and strong, and to the corners of the mouth is four inches long: the head and neck are of a deep black, glossed with green and purple; the hind part of the latter being streaked with a large white band shaped like a crescent; exactly under the throat is another band; and both are marked with black oblong strokes pointing downwards. The lower part of the neck is a deep black, tinged with a rich purple gloss: the breast and under side of the body is wholly white; the sides of the breast are marked with black lines; and the back, the coverts of the wings, and the scapulars, are black, thickly marked with white spots. The tail is very short, *and almost hid* by the scapulars; the legs *and feet are black.* The female is less than *the male,* and her whole upper plumage inclines more to brown. This bird in the north of Europe and the Arctic and is sometimes, though rarely, England. It seldom quits the sea, or

GREAT NORTHERN DIVER.
(COLYMBUS GLACIALIS.)

inland, except during the period of tion, when it repairs to the borders of water lakes; and the female depos large eggs of a pale clear yellowish marked with very large and small ashy-purple. Fish is the principal this species, and the herring in part the fry of fish, crustaceans, and vegetables.

The RED-THROATED DIVER. (*Colymbus septentrionalis.*) This species is abo feet in length, and three feet four inc breadth. The sides of the head, neck throat are mouse colour; the top head is spotted with black; the hinde lower part of the neck are longitudi rayed with black and white; the upp part of the neck, to the throat, is of a chestnut-red; the breast and under pa the plumage are pure white: the sid back, and the rest of the upper par blackish brown in the very old birds, those of the age of three or four years are slightly sprinkled with small white The male and female are nearly alik their plumage. This species inhabits same cold countries as the other Diver its manners and habits do not differ theirs; but it is of a more lively char and has a more sprightly appearance. breed and are common in Hudson's Greenland, Iceland, the Zetland and O Isles, &c. The female makes her nest, is composed of moss and herbage, lined a little of her own down, on the very the shore: she lays two eggs, white somewhat longer than those of a hen, a dingy bluish-white, thinly marked dusky spots. They run swiftly on the face of the water, but are very awkwa land, from which they rise with diffi their flight, however, when once on the is both strong and swift.

BLACK-THROATED DIVER (*Colymbus* ...) differs in plumage from the last ...t, and is rather larger. The bill ...t of the neck are black; the hind ...the head and neck are cinereous; the ...the neck are marked with black and ...es, and the fore part is of a glossy ...purple, black, and green. The ...scapulars, and the coverts of the ...re black; the two former being ...with square, and the latter with ...hite spots: quills dusky; tail black; ..., and reddish on the inside. Like ...ding, this bird is common in all the ...gions; and in its winter migrations ...England, Germany, and Holland. ...us are dressed, and made into caps, ..., and are much esteemed as a co... the head and breast in the rigor...ts in which these birds are found, ...thickness of the feathers rendering ...y fit for that purpose.

...ICK, or DIDAPPER. (*Podiceps* ...) A Palmipede bird of the Grebe kind. ...exceeds six ounces in weight: the ...ort, large at the base, and tapering ...int: the head is thickly clothed ...ny feathers, which it can puff up ...re; the eyes are large, the wings ...d it has no tail. Its plumage on ...is of a deep blackish brown colour, ...e on the belly. It moves with more ...nder the water than on its surface, ...s itself from that element with great ...; but when once on the wing, it is ...f continuing its flight for a consi...ume. "Ornithologists and sports...ribe the nest of this bird as being of ...ize, and composed of a very great ...of grass and water-plants, at least ...thickness, and so placed in the water ...female hatches her eggs amidst the ...wet, in which they were first laid: ...conjectured that the natural warmth ...ly occasions a fermentation of the ...which greatly aids the incubation. ...from four to six eggs, of a yellowish ...e, and is said to cover them up with ...ounding leaves every time she has ...to stir abroad." (*Bewick.*)—There ...al other species of the Dobchick; as ...ed, the Eared, the Black and White ...k, &c.; all of which are larger than ...here described. [See GREBE.]

... A large and most unwieldy bird, ...supposed to be extinct, and whose ...ence at any period has been doubt... as there are accounts of it in the ...f more than one naturalist, and as ...rified most minutely, it behoves us ...the best information of it we can ...he Dodo is stated to be a native of ...ritius, or Isle of France; and the ...who first discovered it there, are said ...ommed it the nauseous bird, as well ...disgusting figure, as from the dis...e taste of its flesh. Its appearance, ...f giving one an idea of swiftness, ...mon attribute of birds in general, ...strike the imagination as something ...unwieldy and inactive in nature. ...ny and almost globular body, which is covered in general with grey feathers, is barely supported on two clumsy legs; while its head and neck rise from it in a manner truly grotesque. The neck, thick and pursy in itself, is surmounted by a head composed of two enormous mandibles, opening far behind the eyes, which are large, black, and prominent; so that the huge bird, in gaping,

HEAD AND FOOT OF DODO
(DODUS INEPTUS.)

exhibits a most enormous mouth: hence the bill is of an extraordinary length, thick, sharp at the end, and having each chap crooked in opposite directions; and the two mandibles, which are of a bluish-white colour, in some measure resemble two spoons laid back to back. The Dodo seems to be so weighed down by its own gravity, as scarcely to possess strength sufficient to give energy to its motions; and it appears among the feathered tribe what the Sloth does among quadrupeds, an unresisting creature, equally incapable of flight or defence. Its wings are covered with soft ash-coloured feathers, intermixed with a yellowish-white, but they are too short to render it any essential service in flying: its tail is composed of a few small curled feathers of a light ash-colour; its legs are too short to assist it in running; and its body is exceedingly clumsy. From all that can be gathered concerning this obscurely known bird, it would seem that the species has entirely disappeared; and we now possess no more of it at the present day than a foot preserved in the British Museum, and a head and foot in bad condition at the Ashmolean Museum in Oxford.—Dr. Melville has written, in conjunction with Mr. Strickland, an elaborate memoir on this bird, which they believe to have been a *Pigeon* somewhat allied to the genus TREBON. This memoir, or part of it, which embraces the history of the SOLITAIRE, was read at the meeting of the British Association at Oxford, 1847. It has been published, with most exquisitely accurate engravings from the pencils of Ford and Dinkel. In the British Museum there is a painting believed to be a *representation* of this bird; *and in the same case are casts from the Oxford remains, and other casts throwing light on its history. It is a bird which would appear*

canine races, may be thus stated: — The structure of the animal is identical, or so nearly so, as to afford the strongest *à priori* evidence in its favour. The Dog must have been derived from an animal susceptible of the highest degree of domestication, and capable of great affection for mankind; which has been abundantly proved of the Wolf. Dogs having returned to a wild state, and continued in that condition through many successive generations, exhibit characters which approximate more and more to those of the Wolf, in proportion as the influence of domestication ceases to act. The two animals will breed together, and produce fertile young. The period of gestation is the same.

"The races of Dogs have at different times been variously classified, according to the views of the respective authors; but, as it appears to me, with very little truth in a zoological point of view, and as little practical advantage. Although it is obvious that certain varieties approach more nearly to each other in habit and conformation than others, there is not sufficient ground for a regular systematic arrangement. Buffon, F. Cuvier, and other authors, have attempted such classifications; but they have been merely artificial, and in many instances have gone upon erroneous suppositions as to the origin of mixed races.

"The food of the Dog is various. It will live on cooked vegetable matters, but prefers animal food, and is particularly fond of it when approaching putrefaction. Its stomach will digest portions of bone. In drinking, it laps with the tongue; it never perspires; but the nose is naked and moist; and when hot, the tongue hangs out of the mouth, and a considerable quantity of water drops from it. It walks round the place it is about to lie down upon, and coils itself up in the same direction. The female goes with young sixty-three days, and usually has about six or eight at a litter; though sometimes as many as twelve or fourteen. These are blind at birth, and do not acquire their sight until the tenth day. It is commonly stated that the male puppies resemble the father, and the female the mother: this, however, if it be true to a certain extent, is not absolutely so; but, like many other animals, the father of the first litter often pro-

SIBERIAN DOG.

duces an impression which is scarcely lost in all the subsequent ones. This is a fact worthy of particular attention, as it bears upon a question of as great interest and importance as any in the whole range of animal physiology. Such are some of the general *habits of the* whole species; and there are *many others* which are too well known to require repetition. Those which belong to the different races will be briefly mentioned under the separate heads."

Like the young of most animals which bring forth many at a time, the Dog is not perfectly formed when first produced. During their blind state the bones of their skulls are incomplete, their bodies are inflated, their noses are contracted, and their whole figure is but imperfectly represented; but in less than a month the puppy begins to acquire all its senses, and from that time makes hasty advances to perfection. At the end of the fourth month, the Dog, like other animals, sheds some of his teeth, which are renewed by such as are permanent. The teeth of the Dog being his principal, and indeed his only defence, they are formed in such a manner as to render him the most essential services: he cuts with his incisors or fore-teeth; he holds with his four great canine ones; and he chews with his grinders, which are fourteen in number, and so placed that when his jaws are shut there remains a distance between them; so that on opening his mouth to the greatest possible stretch, he does not lose the power of his jaws. Though the Dog is a voracious animal, he is capable of enduring hunger for a considerable length of time: it seems, indeed, that water is more necessary to his subsistence than food; and he drinks often, though not abundantly.

We shall conclude this article with some extracts from an ingenious essay "On the Dog, as the Companion of Man in his Geographical Distribution," by Dr. T. Hodgkin, in *The Zoologist*, edited by Mr. Newman:— "The most striking natural group, the most marked in its characters, and the most widely diffused of all the known varieties, is that which we may trace from China, over the northern portion of the old continent, to the islands of the Northern Ocean and the northern part of America. In this wide extent we find, as we should reasonably anticipate, some distinctly marked subdivisions, yet all so evidently maintaining the common type, that the least skilful observer must immediately recognise the family resemblance. The dogs constituting this group may be thus enumerated: 1. Those of China. 2. Those of Kamskatka, and others of the same stock employed in drawing sledges in the northern parts of Asiatic Russia. 3. The very distinctly marked variety of dogs occurring in the northern parts of Europe, and which are called *Spitz* in Germany, but which are known as Pomeranian dogs when introduced into France and England. 4. The dogs of Iceland, with which are probably connected those of Lapland and Greenland. And lastly, those of the Esquimaux. A very remarkable family likeness is to be detected in all this group, of which perhaps the most striking features are the sharpened nose, rather small pointed ears, the approaching eyes but little projecting, the superior length of hair about the neck, with a greater or less tendency to shagginess on the other parts of the body, and, in most instances, an elevated curled tail, with a temper which may be characterised as restless and irritable. We meet with many va-

in stature, colour, and length of hair. It would appear that the dogs of China [illegible] black, the epitelium of the mouth [illegible] having the same colour. Those [illegible] of Europe are almost invariably [illegible] light brown, whilst those of the [illegible] are often black and white. From [illegible] we see specimens both of large and [illegible] size, having the same charac- [illegible] form. Those of the Esquimaux and [illegible] are of rather a large size,

ESQUIMAUX DOG.

those of Iceland are small, and pro- [illegible] in proportion than any other of [illegible]. The dogs of this group appear to [illegible] widely in their degree of fidelity and [illegible]. The Pomeranian variety, which is [illegible] the most completely domesticated, [illegible] and sagacious, and makes an ex- [illegible] guard, and the smaller specimens [illegible] the admired pets of the ladies. From [illegible] which came to my knowledge, [illegible] inclined to believe that the Chinese [illegible] the same character. Those of [illegible] and the Kamskatkadales are [illegible] valuable on account of their strength [illegible] of fatigue; but they are often [illegible] and untractable; and though [illegible] sagacious and capable of being [illegible] as retrievers, they are destructive, [illegible] be left with safety in the way of [illegible], bearing in this, as well as in some [illegible] particulars, a strong resemblance to [illegible], with which it is known that their [illegible] occasionally blended. It may, [illegible], be observed, that independently of [illegible] connexion, the whole group of [illegible] are now speaking has something [illegible] the wolfish expression than any other [illegible] of the *Canis familiaris*. * * *

[illegible] extensive division of the species, [illegible] appears to me to have been spread [illegible] different portion of the globe, and [illegible] to belong to the western part of [illegible] southern parts of Europe, and north [illegible], may perhaps be regarded as com- [illegible] the true hunting dogs. They possess, [illegible] most part, well-developed noses; [illegible] are large, broad, and pendulous; [illegible] rather thick than other- [illegible] their jaws large as compared with [illegible], and their tails thick. The de- [illegible] of hounds left by Greek authors, [illegible] have been applied to dogs of this [illegible] which will also be recognized in the [illegible] hound, and in all the varieties [illegible] hound, down to the beagle. [illegible] strikingly exhibits the same [illegible], and all the varieties of *spaniel* [illegible] to be *essentially branches of the same* family, though probably modified by a cross, respecting which I shall presently hazard a conjecture. The true smooth terrier appears to be of the same division, though some passing under this name are probably mixed with another stock. In some of the dogs of this group we find probably the most marked effects of culture. Their large pendulous ears, as in some varieties of rabbits, may be referred to this cause. With a greater degree of submission and attention to man, they have also a greater degree of dependence upon him, and some almost resemble the sheep and the cow in this respect, whilst their more artificial faculties, which have been cultivated for many generations, have become innate in the offspring. Thus the pointer's puppy, of a few weeks old, begins to point of his own accord, and anticipates the first lessons of his trainer; just as young horses will frequently adopt the artificial paces which have been taught to their sires.

"A third group is less distinctly marked as a whole, and I am not prepared to lay any great stress on the reasons which have induced me to bring some of its varieties together; but in others we have the strongest evidence of their affinity, both in visible characters and known connection of blood, notwithstanding great apparent differences of figure. In this group I would place the greyhound, and that variety of shepherd's dog which most nearly approaches him in form. It would be quite a mistake to suppose that the shepherd's dog is a single variety, since different kinds of dogs are employed for this purpose in different districts. The transition of the greyhound to one of the shepherd's dogs takes place by almost insensible degrees, and Cowper's description of half lurcher and half cur must be familiar and graphic to almost every one. In the young animals, when no mutilation of the tail has taken place, the resemblance is most striking. Another variety, perhaps, is more related to the greyhound than even any variety of shepherd's dog; I mean the English bull-dog. It was the perception of the striking resemblance in some points exhibited in these animals, notwithstanding their general difference of figure, before I was aware of the actual consanguinity which breeders are careful to maintain, which first led me to notice the indications of a natural grouping which would seem to clash with artificial arrangement. Though the bull-dog is short, compact, and heavy, with a proverbially large blunt head and broad face, and the greyhound is the very emblem of lightness, his elongated nose, head, and neck resembling a snake, his back long, curved, and flexible, his body, which, with sufficient room for the organs of circulation and respiration, affords almost none for those of digestion, and supported on long and slender limbs, which seem to render him among quadrupeds what the *hirondelle de mer* is among birds—there are individual points of resemblance between the two dogs which are perhaps more striking than any which can be found among other varieties. *The feet and toes are remarkably delicately formed*; the ears small and pointed,

though generally inclined to be pendulous, capable of being erected; the tail remarkably slender, some of the stoutest bull-dogs having tails which would grace an Italian greyhound. Similar colours also prevail in both varieties, and more especially the brindled, the mottled, and the more or less white. In both, the sense of smell is slow for the dog, whilst the sight is good. Both are ferocious and savage when set on: the ferocity of the greyhound is not unfrequently shown in the destruction of sheep."

The author then gives reasons for presuming that the Newfoundland dog, which he says has been regarded as a large species of water-spaniel, is distinctly traceable to the Esquimaux stock; and he concludes by observing that whatever may be the value and results of inquiries like these, as respects the study of ethnology, the labour need not be in vain as respects the animals themselves, since conclusions of more or less practical value can scarcely fail to be deduced for the guidance of the breeder and the benefit of the public.

Dogs are found in all parts of the world, with the exception of a few groups of islands in the Southern Pacific Ocean. But it is only in temperate climates that they preserve their ardour, courage, sagacity, and other talents. [See BLOODHOUND, BULL-DOG, FOXHOUND, GREYHOUND, HOUND, MASTIFF, POINTER, SPANIEL, SHEPHERD'S DOG, &c.]

DOG-FISH. (*Scyllium catulus.*) This species of Shark, called the Large-spotted Dog-fish, is from two to three feet in length; the head is large; the snout prominent and slightly pointed; the skin rough; body cylindric; the colour a brownish grey, with a slight tinge of pale brick red, and marked with very numerous blackish or dusky spots; the belly whitish, and very smooth. These fish, when at their full growth, weigh about twenty pounds each: they are caught in considerable numbers on our own coasts, where their voracious habits do great injury to the fisheries; and in Scotland they constitute no inconsiderable part of the food of the poor. The rough skin of this fish is used by joiners and other artificers in polishing various substances, particularly wood, and is generally known by the name of "fish-skin."

The SMALL-SPOTTED DOG-FISH (*Scyllium canicula*) is in many respects similar to the preceding, and is one of the most common species on our southern coasts, where, keeping near the bottom of the water, it feeds on small fish and crustacea. The upper part of the body is marked with numerous small, dark, reddish-brown spots, on a pale reddish ground; the spots on the fins rather larger and less numerous than those on the body.

The PICKED DOG-FISH (*Spinax acanthias*) is a species very common on the coasts of Kent and Sussex, where it is almost universally called the Bone Dog; it is also very numerous on the north-eastern and western coasts, and is often seen in shoals among the Scotch islands. This fish is distinguished from the others of this class by having a sin spine placed in front of each of its two dor fins, and from which it derives its na We learn from Mr. Yarrell, who quotes Couch, that "they are sometimes found incalculable numbers, to the no small noyance of the fishermen, whose hooks t cut from the lines in a rapid succes The Picked Dog bends itself into the fo of a bow for the purpose of using its spi and by a sudden motion causes them spring asunder in opposite directions: so accurately is this intention effected, t if a finger be placed on its head, it will str it without piercing its own skin." Len about twenty inches; the upper part of head and body slate grey; under parts y lowish.

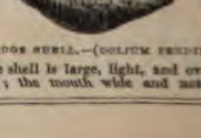
Another species, called the BLA MOUTHED DOG-FISH, (from the colour of inside of its mouth) is well known in Mediterranean. It runs from two feet two feet six inches in length; is of a li brown colour on the head and along back, and on each side are two rows of o lated spots.

DOLABELLA. A genus of Testibr chiate Mollusca, closely allied to the S Hares (*Aplysia*), differing from them having the branchiæ at the posterior p of the body, which looks like a trunca

DOLABELLA RUMPHII AND INNER SHEL

cone. Their lateral crest does not close branchiæ, leaving a groove. The inner s is calcareous. There is more than one s cies; the genus is found both in the Me terranean and the Eastern seas. Some servations on them and allied genera h been published by Arthur Adams, F. L of H. M. S. Samarang. Our figure sh the *Dolabella Rumphii* with its shell.

DOLIUM. A genus of Molluscs, inha ing univalve shells, found, for the most p in the Indian, African, and South Ameri



PARTRIDGE SHELL.—(DOLIUM PERDIX.

seas: the shell is large, light, and oval globular; the mouth wide and notch

transversely banded. The mollus-
al contained in it has a large head
proboscis, and two tentacula with
middle. There are several spe-
of which may be seen in the fine
at the British Museum. The fore-
re of the Partridge Shell (*Dolium*
ill give a very good general idea
n of this genus.

IN. (*Delphinus delphis.*) This
animal bears a great resemblance
poise, but has a much longer and
nout, and the body is of a more
ape. It often grows to the length
ten feet; the colour on the back
is dusky, and the belly whitish;
are very numerous, sharp pointed,
lly bending forwards; and they
so close together, that when the
hut the jaws lock into each other.
in is found in the Mediterranean
n seas, and seems to be generally
d by navigators with the Porpoise,
general manners and appearance
imal. It swims very swiftly, and
arious kinds of fish; and it some-
ems that either from its impetu-
s pursuit of prey, or the calls of
is urged beyond the limits of
nd the fishermen on the Cornish
o spread their extensive nets for
sometimes become possessed of a
leasse prize.

ent writers the Dolphin was cele-
its supposed affection for the hu-
, and its appearance was regarded
rable omen. Numerous, indeed,
bles of antiquity in this respect,
ld have no better foundation than
ion: its figure is far from preju-
in its favour; and its extreme
ends still less to endear it to us.

COMMON DOLPHIN.
(DELPHINUS DELPHIS.)

dices of the moderns are of a con-
racter; for the appearance both of
s and the porpoise at sea, is gene-
ldered as one of the preludes of an
ng storm. Dolphins inhabit every
the equator to the poles, enduring
ell the extremes of heat and cold.
hin, respiring by lungs, and not
ner of fishes, is compelled to rise
face to breathe, throwing out the
n the blow-hole, or aperture in the
a cloud of steam. This hole is of
ar form, with a kind of valvular
, and opens nearly over the eyes.
ture of the ear renders the sense of
ery acute, and the animal is ob-
e attracted by regular or harmoni-
s. Compactness and strength are
ecialise of the genus, and the mus-
cular powers of the tail are proverbial. [illegible]
Dolphin is said to be long-lived, and, like the
Whale, seldom brings forth more than one
young one at a time, which the parent
suckles and watches with great care and
anxiety.

It is, perhaps, almost unnecessary to cau-
tion the reader not to confound the cetaceous
species we have been describing, with the
fish commonly known as the Dolphin at the
present day, and hereunder described.

DOLPHIN. (*Coryphæna hippuris*). This
Acanthopterygious fish has a flat and round-
ish snout, and the body tapers from the head
to the tail; but its principal beauty consists
in the brilliancy of its colours. The back is

DOLPHIN.—(CORYPHÆNA HIPPURIS.)

spangled with bright bluish-green spots; the
tail and fins are of a gold colour; and whether
viewed alive in its native element, or before
it is quite dead, nothing can surpass its lus-
tre. It is about five or six feet long, and
nearly as thick as the salmon. A remark-
able fin runs from the head, along the back,
to the root of the tail, which in the middle
is seven inches broad, and consists of a kind
of coriaceous membrane with soft spines;
opposite to which there is another fin, not
more than an inch broad, and extending
from the vent to the tail. The tail, which
is upwards of two feet and a half long, is
divided into two large horns; and the scales
are so very minute as to be hardly percepti-
ble. This fish swims with such amazing
velocity, as frequently to keep pace with a
swift sailing ship for a very considerable
time. They abound within the tropics, and
are found in all temperate latitudes. In
the neighbourhood of the equator, they
commit great havoc in the immense shoals
of flying-fish which inhabit those regions,
and which constitute the principal food of
the *Coryphæna*. It is remarkable that, in
swallowing their prey, the position of the
captured fish is reversed, and it passes down
the throat head foremost; by which ma-
nœuvre the fins are prevented from impeding
the passage.

DONAX. A genus of bivalve shells, the
form of which is inequilateral and wedge-
shaped. It is found in all parts of the world
buried in the sand of the sea-shore. Many
of the species are beautiful; but only two,
it is said, are found on the British coasts;
one called the Yellow Donax, the other the
Purple.

DORIPPE. A genus of brachyurous De-
capod Crustaceans (comprehended under the
general term *Cancer* by Linnæus), found on
*the sea-coasts of warm climates, where the
water is deep;* the Mediterranean and Adri-
atic seas being among the localities given.

They are generically characterized by having rather long external antennæ, inserted above

FLAT-FRONTED DORIPPE.—(DORIPPE SINUA.)

the intermediate ones, which are folded, but not entirely lodged in the cavities where they take their insertion: claws (*chelæ*) small, short, equal; the other feet very long and compressed, the third pair being the greatest; the two last pair elevated upon the back, and terminated by a small hooked nail: carapace slightly depressed, truncated, and spinous before; truncated, sinuous, and bordered behind; the surface marked with small humps or tubercles: inferior and posterior part of the body truncated into a kind of gutter to receive the reflected abdomen, the pieces of which are tuberculous. The eyes are small, lateral, and supported on moderately long peduncles. It is now known, from Mr. Cuming's observations appended to a specimen in the British Museum, that they make use of the feet, elevated on the back to cover themselves, like the *Dromiæ*, with foreign bodies. There are some fossil as well as recent species. One fossil species, brought from New Holland by Peron, is named *Dorippe nodosa*. In the fine collection of James Scott Bowerbank, F.R.S., there are specimens of a species of this genus found on the Isle of Sheppey, in the London clay.

DORIS. A genus of naked Gasteropodous marine Mollusca, which are likewise destitute of any internal testaceous plate. The mantle is covered with retractile papillæ, and separated from the foot by a distinct duplicature. Towards its anterior margin are placed the two superior tentacula: these are retractile, surrounded at the base with a short sheath, and supported on a slender stem, having an enlarged compound plicated

THE GORGEOUS DORIS—(DORIS MAGNIFICA.)

summit. The neck is short, and above the mouth there is a small projecting membrane connected at each side with the oral tentacula, which are in general minute, and of difficult detection. The mouth is in the form of a short trunk, leading to fleshy lips, within which the tongue is placed. The gullet is a simple membranaceous tube, terminating in a stomach. It is obvious, from the structure of the digestive organs, that the species subsist on soft food. The spawn is gelatinous and of a white colour, and is *deposited on* sea-weed and stones.

Messrs. Alder and Hancock are publishing in one of the works of the Ray Soci scriptions and figures of all the Brit cies of Doris and allied genera, form Nudibranchiate Mollusca. It is a m gant work, the illustrations in whi arrest the attention of even those w but little interest in the subject. C tagu, Dr. Johnston of Berwick, and Alder and Hancock, with other nat have shown how rich our own coas these beautifully organized shell-le lusca.

DORMOUSE. (*Myoxus.*) A mammiferous quadrupeds, of the order *Glires*. They appear to be diate between the squirrels and m habit temperate and warm countr subsist entirely on vegetable food. have two cutting teeth in each jaw toes before, and five behind; and ears. These mice inhabit woods an hedges, building their nests, which with moss and dead leaves, either hollows of trees, or near the roots shrubs. Towards the approach of they form little magazines of nuts acorns, &c., on which to subsist dur inclement season; when they retire retreats, roll themselves up, and fall torpid or lethargic state, which las little interruption, till the winter It was formerly believed that their h tion was a state of continual sleep f period that they sought their winte ters until they emerged from them in genial season. Buffon, however, w perly exposed the absurdity of the notion; and has observed that these occasionally wake, and make use stock of provision. They bring forth or four at a time, which are usua blind, and remain so for a few days. are several species.

The COMMON DORMOUSE. (*Myoxus avellanarius.*) The body is about the size of the common mouse, but it is of plump or rounder form, and the nose obtuse: the eyes are large, black, s

COMMON DORMOUSE.
(MYOXUS AVELLANARIUS.)

minent; the ears round and woo parent; the tail is two inches and long, and more hairy towards the t on the other parts: the head, back, belly, and tail are of a tawny red but the throat is white: the fur is v ably soft, and the animal altogether

considerable degree of elegance in its appearance. Its habits are similar to those described in the preceding paragraph.

The Fat Dormouse. (*Myoxus glis.*) This species is a native of France and the South of Europe. Its body is covered with soft ash-coloured fur; the belly is whitish; the tail is surrounded with very long hair; and the ears are thin and naked. Its length, from the nose to the tail, is nearly six inches, that of the tail being four and a half; and the body is thicker than a squirrel's. Like the last-mentioned animal, although these have not its activity and sprightliness, they can ascend trees in search of their food, which they carefully store up for their winter consumption. During its state of torpidity it is said to grow very fat, contrary to the nature of most of the hybernating or sleeping animals; but there is no doubt that it sensationally wakes, and feeds on its store; in truth, it is at all times fat, and appears as much so in spring as in autumn. Its flesh was esteemed a great delicacy by the Romans, who had their *glirarium*, or places in which they were kept and fattened for the table.

The Garden Dormouse (*Myoxus nitela*) is a native of the temperate parts of Europe and Asia. It makes its nest, like the rest of this genus, in the hollows of trees, and sometimes in those of walls, where it generally fixes its abode, and remains in a state of torpidity during a great part of the winter, awaking, however, at intervals. Its general length is about four inches and a half, and the tail not quite so much. It is of an elegant rufous colour above, and yellowish white underneath: the eyes are imbedded in a large black patch or spot, which extends to some distance beyond each ear: the tail is rather wide towards the end, sharpening at the extremity, and is marked on that part by a longitudinal black stripe, having the edges white. Delighting in all sorts of fruit, but particularly in wall fruit, these animals prove very destructive in gardens. They produce their young about the middle of summer, which are about five or six in number.

DORSIBRANCHIATA. A name given by Cuvier to an order of *Annelike*, or red-blooded worms, which have their organs, and particularly their gills, distributed about equally throughout the middle part of the body. The Nereis, or Sea-centipede, is an example of this order. [See Nereida.]

DORY, DOREE, or JOHN DORY. (*Zeus.*) There are several species of this very singular Acanthopterygious fish, which is distinguished by having the spinous portions of the dorsal and anal fins separated by a deep emargination from the soft-rayed portion, and having the base of all the vertical fins, and the carina of the belly anterior to the anal fin, furnished with spines.

The Common Dory (*Zeus faber*) is a native of the Mediterranean, Northern, and Atlantic seas; *but no locality is more noted for it than Torbay, on our own western* coast. It is distinguished by its large and long head, its dusky green colour, accompanied by a strong gill tinge, and particularly by a large, oval dusky spot on each

DORY — (ZEUS FABER.)

side the body: the mouth is wide, the lower jaw longer than the upper, the teeth small and sharp, and the eyes large; the whole body is covered with very small scales, and marked by a curved lateral line, which, descending rather suddenly from the gill-covers, passes on to the tail: the back is much arched, and furnished with a row of strong small prickles, which are also continued along the curve of the abdomen: the tail is of a moderate size, and rounded at the end. The Dory is of an extremely voracious nature, preying on the smaller fishes and their spawn, as well as on various kinds of crustacea and marine insects. The form of the Dory is extremely forbidding, so much so as to deter our ancestors from tasting it; and although its flesh is now esteemed delicious food, its reputation among epicures is but of modern date. The name is said to be derived from the French, *jaune* (yellow) *dorée*, corrupted into John Dory. In general it is from twelve to fifteen inches in length, though it sometimes arrives at a far superior size, and of the weight of ten or twelve pounds.

There are a few other species, but less remarkable than the preceding:—The Brazilian Dory (*Zeus vomer*), which is about six or eight inches long; body very thin, without scales, and of a bright silver colour, tinged with a bluish cast on the upper parts. —The Indian Dory (*Zeus Gallus*) is about the same size as the one just mentioned: body very thin, silvery, and without scales: head large, mouth wide. Native of the American and Indian seas.—Ciliated Dory. (*Zeus Ciliaris.*) This species, which is also destitute of scales, is of a bright silver colour, with a cast of bluish-green on the back: head small, and very sloping; lower jaw rather longer than the upper: several of the last rays both of the dorsal and anal fin extend to a vast distance beyond the membrane, reaching farther than the tail itself. *It has been supposed that the smaller kind of fishes may be attracted with these long and flexible filaments, and mistake them*

for worms, while the Dory lies concealed among sea-weeds, &c., waiting for its prey. It is a native of the Indian seas. [See ZEUS.]

DOTTEREL. (*Charadrius morinellus.*) This Grallatorial bird is about ten inches in length: the beak black, slender, and one inch long; forehead mottled with dusky and grey; the hinder part of the head is black; and a broad white line over the eyes surrounds the whole. The back and wings are a light brown; the breast is a pale dull orange; the middle of the belly is black; the edges of the feathers are pale rust colour, and the lower part of the back and rump incline to gray. The tail is composed of twelve brown olive-coloured feathers, barred with black near the ends, and tipped with white: the thighs are a reddish white, and the legs black. The female is rather larger, and the colours more dull; the white line over the eye is smaller; and the crown of the head is mottled with brown and white. Dotterels inhabit the northern parts of Asia and Europe, frequenting the muddy borders of rivers: they are migratory, being seen on our moors and downs in their flights to and from their breeding-places, from April to June, and again from September to November. Being fresh from regions and wilds untrodden by man, and not having experienced persecution, they do not so readily take alarm, as other birds do which have been reared in the vicinity of their general enemy: they have, in consequence, obtained the character of being very stupid birds, and, it is said, may be taken by the most simple artifice; but night-fowling, and all modes of ensnaring them, have yielded to the more certain method of bring them down with a gun.

DOTTEREL, SEA. [See TURNSTONE.]

DOVE. [See PIGEON: RING-DOVE: TURTLE-DOVE.]

DRAGON. (*Draco volans.*) Instead of the formidable monster of this name, which reels to the imagination the wild fictions of romance, the animal we are about to describe is a small and harmless lizard, agreeing in the general form of its body with the rest of that tribe; but furnished with large, expansile, cutaneous processes, which, when expanded, enable it to support itself in the air for a few seconds, in springing from branch to branch, among the lofty trees in which it resides. The total length of this highly curious creature is about ten or twelve inches: the tail being extremely long in proportion to the body, which is not above four inches. The head is of a moderate size, but very singular form, being furnished beneath with a very large triple pouch, one part of which descends beneath the throat, while the two remaining parts project on each side; all being sharp-pointed: the mouth is rather wide; the tongue large, and thick at the base; the teeth small and numerous; the neck, body, and limbs rather slender, and covered with small acuminated and closely set scales. The colour of this animal on the upper parts is an elegant pale blue, or bluish-grey, the back and marked by several transverse du lations, while the wings are very spotted with patches of black, li

DRAGON.—(DRACO PINNATA

white: the border of the wings is and the whole under surface of t is of a very pale or whitish bro Species of this genus are inhabitan parts of Asia, Africa, and South they feed on insects; and are in ev animals of a harmless nature.

All the frightful animals des figured in the works of some o naturalists, under the name of D merely fictitious beings, either composed of the skins of differen or made by warping some particu of the ray or skate tribe into a d shape, by expanding and drying an elevated position, adding t birds, &c., and otherwise disguisin mals. Such also are the monstr sentations (to be found in Gesner randus) of a seven-headed Dra gaping mouths, long body, snake and tail, and feet resembling thos Some of the dragons of antiquit scribed as having no feet, but a like serpents, and their bodies co scales, and so powerful as to cru phant with the greatest ease. T which gave rise to these is probabl than the great Boa Constrictor. has not heard of the fabled Dra middle ages, which had the feet the long thick tail of a serpent, a mense throat, from which strea of fire? This dragon played a dis part in the days of chivalry; and those monsters whom it was the the heroes of romance to attack an We have, involuntarily as it were to notice the fabulous history of t in order to point out the gross connected with Natural Histor though long since exploded, we period received as matters of fact.

DOUC. (*Semnopithecus.*) A gra keys peculiar to Cochin China, Indies, and neighbouring islan

true Monkeys by having an all tubercle on the last of the s; and are farther distinc- ir lengthened limbs and ex- ed tail. In their muzzle, as ring posterior callosities, they ibbons. Though capable of heir movements are staid and d their general deportment gravity. [See MONKEYS.]

THS]. A name given by col- s of the genus *Orthosia*. They QUAKERS.

r. (*Callionymus lyra*.) A th-spiny fish, inhabiting ean and Northern seas, and ength. The head is large and ressed; the mouth wide, and and numerous; the eyes are ch other on the upper part the body is of a taper form, ddition of visible scales. Ac- rnant, the pupils of the eyes sapphirine blue colour; the y carbuncle, the pectoral fins the side lines straight; the fish yellow, blue, and white, ful appearance when fresh

o or three other species, one d the OCELLATED DRAGONET, ellatus) about the size of one's a native of the Indian seas. maller and sharper than in genus, and rather flat at the mall, with toothed, fleshy lips, double; lateral line straight;

LY. (*Libellulida*.) A nume- Neuroptera. They are of blue, crimson, and scarlet colours; ety of the most vivid tints are ley are easily distinguished insects by the length of their e size of their eyes, and the symmetry of their wings. These

[PLY - LIBELLULA DRAWINS.]

lively insects, which are seen h strength and rapidity round and pursuing the smaller in- velocity of a hawk, were at bstacle of the water, and re- shment for a long space of y assumed their flying form.

The mouth of the Dragon-fly contains a formidable apparatus of mandibles and maxillæ, denticulated at the tip; the antennæ are very short, being merely a pair of small hairs; the wings large and spreading, and the body elongated.

There are many different genera and species of the *Libellulidæ*, both native and exotic. One of the largest English species is the *Æshna varia*, or Great variegated Dragon-fly. This insect makes its appearance principally towards the decline of summer, and is singularly elegant: its general length is about three inches from head to tail, and the wings when expanded measure near four inches from tip to tip: the head is very large; the neck extremely slender; and the eyes, which occupy by far the greatest part of the head, are of a pearly blue-gray cast: the front is greenish yellow; the thorax of the same colour, but marked by longitudinal black streaks; the body, which is very long, slender, and sub-cylindrical, is black, richly variegated with bright blue and deep grass-green: the wings are perfectly transparent, strengthened by very numerous black reticular fibres, and exhibit a strongly iridescent appearance. In the day-time it flies about in pursuit of its prey with astonishing rapidity; but during the early morning hours, and in the evening, it is observed to sit with its wings expanded, and may be easily taken.

All the insects of this family are produced from eggs deposited in the water, which, sinking to the bottom, are hatched, after a certain period, into flattish hexapod larvæ: they cast their skins several times before they arrive at their full size, and are of a dusky brown colour: the rudiments of the future wings appear on the back of such as are advanced to the pupa or chrysalis state, in the form of a pair of oblong scales; and the head is armed with a most singular organ for seizing its prey; viz., a kind of flat proboscis, with a joint in the middle, and a pair of strong hooks or prongs at the end. This proboscis, when the Dragon-fly is at rest, is folded or turned up in such a manner as to lap over the face like a mask; but when the creature sees any insect which it means to attack, it springs suddenly forwards, and by stretching forth the jointed proboscis, readily obtains its prey. In this their larva and pupa state they continue for two years, when, having attained their full size, they prepare for their ultimate change; and creeping up the stem of some water-plant, and grasping it with their feet, they make an effort by which the skin of the back and head is forced open, and the enclosed Libellula gradually emerges, its head and wings first appearing. The wings, at this early period of exclusion, are very tender and contracted, all the ramifications or fibres having been compressed within the small compass of the oblong scales on the back of the pupa; but in about half an hour they are fully expanded, and have acquired the strength and solidity necessary for flight. This *curious process* of the evolution or *birth of the Dragon-fly* generally takes place *on a fine sunny morning*; and though for a

time it roves the field and forest, or disports itself on the margin of the silvery stream — lightly traversing the air in a thousand directions, and expanding its gossamer wings to the sun — how short is its aerial and terrestrial life, compared with that which it passed in its aquatic state! Scarcely have the frosts of autumn nipped the tenderest plant, ere the whole tribe of Libellulæ perish from the cold.

Among the varieties of the Dragon-fly, many of them may sometimes be observed in the same field, or flying within a small distance of each other on the borders of their natal stream; and though they differ in their size and variegations, their general form and habits correspond too nearly to be mistaken for any other winged insects. A specific notice of each may therefore be thought unnecessary. We shall, however, avail ourselves of Dr. Shaw's description of one species of "exotic" Libellula, and his concluding remarks relative to the extraordinary character of the eyes of these insects in general. "The *Libellula Lucretia* is a native of the Cape of Good Hope (or rather of S. America), and is distinguished by the excessive length of its slender body, which measures not less than five inches and a half in length, though scarcely exceeding the tenth of an inch in diameter: the wings are transparent, of a slender or narrow shape, as in the *L. puella*, to which this species is allied in form, and measures five inches and a half in extent from tip to tip: the colour of the head and thorax is brown, with a yellowish stripe on each side, and the body is of a deep mazarine blue.

"I should not dismiss the genus Libellula without observing that in some species, and particularly in the *L. varia*, *grandis*, &c., the wonderful structure of the cornea or external coat of the eye, which prevails in by far the major part of the insect tribe, is exhibited with peculiar distinctness. Even a common magnifier, of about an inch focus, demonstrates that the cornea is marked by a prodigious number of minute decussating lines, giving a kind of granular appearance to the whole convexity: but when microscopically examined, it exhibits a continued surface of convex hexagons, and if cut from the head, and cleared from its internal pigment, it appears perfectly transparent, and seems to consist of an infinity of hexagonal lenses of equal convexity on both surfaces. This is a subject on which much might be said; but the compass of the present publication forbids too circumstantial a description of minute and disputable particulars. It may be sufficient to observe that on each eye of this animal, according to the computation of Lewenhoek, there are about 12,544 of these lenses."

To those who would study in detail the members of this group, we would recommend the volume of Rambur in the "Suites à Buffon," and the works of Van der Linden, De Selys Longchamps, and especially Charpentier. In this country, J. C. Dale, Esq. F.L.S., has made the group a special subject *of study, and Mr.* W. Evans has published *rough figures of* all the British species, which may prove useful in identifying them. Dragon-flies are often found in a fossil state, as early as in the lias formation. [See PTILLURA.]

DRILL. [See APE.]

DRIVER ANT. The local name given to a species of Hymenopterous insect belonging to the family of Ants. Its name is *Anomma arcens*. The following very interesting account is derived from a paper by the Rev. Dr. Savage, an American missionary on the coast of West Africa, and published in the "Transactions of the Entomological Society" for 1847.

The writer prefaces his narrative by saying that he is not aware that the insect in question has ever been described, or that it exists in any of the European cabinets; but he thinks it is, without doubt, that of which Mr. Smeathman speaks, when he says, "one species, which seems at times to have no fixed habitation, ranges about in vast armies. By being furnished with very strong jaws, they can attack any animal whatever that impedes their progress, and there is no escape but by immediate flight or instant retreat to the water. The inhabitants of the negro villages are frequently obliged to abandon their dwellings, taking with them their children, &c., and wait till the ants have passed." Dr. Savage says it is evidently closely allied to the *Atta cephalotes* of Fabricius, found in the West Indies and South America, and like that named by the French "*Fourmi de visite*," would be not inappropriately styled the "visiting ant," though he considers the appellation *Driver* more significant of its habits. "Its domicile," he says, "if such it may be called, consists of a shallow excavation under the roots of trees, shelving rocks, and almost any other substance that will afford a shelter; not originating with themselves, but adopted and completed as the wants of their community may require; their mode of life not admitting of cells and magazines, and other interior arrangements, by which the dominion of other ants more retiring and less aggressive in their habits are characterized.

"Their sallies are made in cloudy days, and in the night, chiefly in the latter. This is owing to the uncongenial influence of the sun, an exposure to the direct rays of which, especially when the power is increased by *reflection, is almost immediately fatal*. If they should be detained abroad till late in the morning of a sunny day by the quantity of their prey, they will construct arches over their path, of dirt agglutinated by a fluid excreted from their mouth. If their way should run under thick grass, sticks, &c., affording sufficient shelter, the arch is dispensed with; if not, so much dirt is added as is necessary to eke out the arch in connection with them. In the rainy season, or in a succession of cloudy days, this arch is seldom visible; their path, however, is very distinct, presenting a beaten appearance, and freedom from every thing movable. They are evidently economists in time and labour; for if a crevice, fissure in the ground, passage under stones, &c., come in their

Drivers are found under the
holes and other places, re-
lves in the shade till the
sun, when their work is re-
ir characteristic vigour.
lays, when on their predatory
migrating, an arch for the
he workers, &c. is constructed
f their largest class. Their
d jaws, long slender limbs,
antennæ intertwining, form
rk that seems to answer well
Whenever an alarm is given,
tantly broken, and the ants,
f the same class on the out-
e, who seem to be acting as
uides, and scouts, run about
mmer in pursuit of the enemy.
should prove to be without
victory won, or danger passed,
ickly removed, and the main
n forward as before in all the
ellectual military discipline.
describe an attempt that I
o destroy one of their commu-
with the facts in the order in
spired, and the collateral cir-
ending it, will fairly illustrate
habits. My observations were
at my former station (Cape
I resided nearly eight years.
at my present station about
During the first four months
eriod I was greatly annoyed
at visitations and ravages of
at one time literally *driving*
ber of the female department
at another the male depart-
inmates of my own dwelling;
ng my horse, then my pigs,
nothing, in fine, possessing
caping their assaults. They
d upon us at night, and gene-
scenes were reposing in sleep.
were apprised of their de-
fall by a few suspicious in-
ng in the vicinity in advance
dy, but mostly they took us

to be there, besides thousands that were going and coming with astonishing speed and alacrity.

"In attempting their destruction I adopted the mode of the natives, which is, to ignite on the spot a collection of the dried leaves of a species of Corypha (fan palm of this coast), about six feet in diameter, and dried grass, with other combustible matter. A fire of great intensity was thus kindled, which continued to burn for a considerable time. This I supposed would be the last of our troublesome neighbours. Two days after, however, on going to the spot for the purpose of examining into their domicile, I was surprised to see a tree at a short distance, about eighteen inches in diameter, to the height of four feet from the ground, with the adjacent plants and earth, perfectly black with them. From the lower limbs (four feet high) were festoons or lines of the size of a man's thumb, reaching to the plants and ground below, consisting entirely of these insects; others were ascending and descending upon them, thus holding free and ready communication with the lower and upper portion of this dense mass. One of these festoons I saw in the act of formation; it was a good way advanced when first observed: ant after ant coming down from above, extending their long limbs and opening wide their jaws, gradually lengthened out the living chain till it touched the broad leaf of a Canna coccinea below. It now swung to and fro in the wind, the terminal ant the meanwhile endeavouring to attach it by his jaws and legs to the leaf; not succeeding, another ant of the same class (the very largest) was seen to ascend the plant, and, fixing his hind legs with the apex of the abdomen firmly to the leaf under the vibrating column, then reaching forth his fore legs and opening wide his jaws, closed in with his companion from above, and thus completed the most curious ladder in the world."

In about two hours Dr. Savage visited the spot again, when the hanging lines or fes-

"Their mode of biting differs from that of the soldiers among the *Termes*. The mandibles of the latter are flat and sharp, and move in a cross direction, cutting in the manner of scissors. The mandibles of the Driver of the first class are very prominent and formidable, strongly hooked, having one tooth; those of the second classes are flatter, sharper, and armed with two strong teeth, the edges finely serrated, and admirably calculated for lacerating and cutting muscular fibre. The onset of the former is with a grasp that causes their victim to start and wince as if life were in danger; their mandibles are fixed so strongly into the flesh, and their hold retained with such pertinacity, that a separation is effected often only by a dismemberment of the body. If permitted to retain their hold, the motion of their jaws is alternately from one side to to the other, penetrating deeper and deeper at every stroke. With the second class there is not only this gradual penetration, but at the same time lacerating and cutting of the flesh, with an approximation of the jaws at each effort. This difference in the form and motion in the two classes led me to infer a difference of duties or office in their economy. This impression has been confirmed by repeated observations. To the first class, it would appear, is assigned the defence of the community; it is theirs also to attack and disable their prey. The second lacerate and cut the flesh, and are assisted by the first in tearing it off. Upon the third, who appear to be especially the labourers, devolves the burthen of transportation, whether of prey or pupæ. They are seen to be assisted often by the second class, and, when the prey is too large for either, the first is called in.

They carry their pupæ and prey longitudinally under their bodies, held firmly between their mandibles and legs, the latter of which are admirably calculated by their length and slenderness for this purpose; and the freedom and ease with which they carry their burthen is truly surprising. — Whenever a stream of water intercepts their course in their excursions and migrations, if it should not be extensive they compass it, but if otherwise, they make a line or chain of one another, gradually extending themselves by numbers across, till a connection is formed with the opposite side, and thus a bridge is constructed, over which the main body passes in safety. — Their tenacity of life appears to be truly extraordinary. This was evinced by a series of experiments. An individual of the largest class was submerged to the bottom of a glass of water, where it struggled for about three quarters of an hour, and then apparently expired; but it revived in about ten minutes after it was taken out, exhibiting about as much vitality and ferocity as before. It was re-submerged for five hours, with like results. It was submerged the third time, and kept under water for twelve hours. When taken out it revived, and continued to exhibit signs of *life for* about twelve hours more, and then *expired*. Various other experiments were *tried*. *The head* of one of the largest class, when disevered from the body, grasped the finger of an attendant so furiously as to cause an immediate flow of blood; another decapitated head retained its power of biting so as to draw blood, precisely in the manner of the insect in possession of all its parts and powers, twenty-four hours after decapitation; while the body to which it belonged lived more than forty-eight hours!

"I know of no insect," says Dr. Savage, "more ferocious and determined upon victory. They fiercely attack anything that comes in their way,—'conquer or die' is their motto. Yet they are not without their use in the economy of nature. They keep down the more rapid increase of noxious insects and smaller reptiles; consume much dead animal matter, which is constantly occurring, decaying, becoming offensive, and thus vitiating the atmosphere, and, which is by no means the least important in the Torrid Zone, often compelling the inhabitants to keep their dwellings, towns, and their vicinity, in a state of comparative cleanliness. The dread of them is upon every living thing. It may be literally said that they are against everything, and everything against them. I have known my dog, on meeting them in the road, instead of running any risk by leaping over them, go a great distance round to avoid their well-known bite. My donkey has more than once stopped so suddenly and turned, as to throw me over her head, or to one side, and when urged forward, leaped far over the line. — They will soon kill the largest animal if confined. They attack lizards, guanas, snakes, &c., with complete success. We have lost several animals by them, monkeys, pigs, fowls, &c. The severity of their bite, increased to great intensity by vast numbers, it is impossible to conceive. We may easily believe that it would prove fatal to almost any animal in confinement. They have been known to destroy the *Python natalensis*, our largest serpent. When gorged with prey it lies powerless for days; then, master as it is, it easily becomes their victim. — Their entrance into a house is soon known by the simultaneous and universal movement of rats, mice, lizards, *Blaps sulcicollis*, and of the numerous vermin that infest our dwellings. — They are decidedly carnivorous in their propensities. Fresh meat of all kinds is their favourite food; fresh oils they also love, especially that of the *Elais guineensis*, either in the fruit or expressed. It is not true, however, that they devour every thing eatable by us in our houses; there are many articles which form an exception. If a heap of rubbish comes within their route, they invariably explore it, when larvæ and insects of all orders may be seen borne off in triumph, — especially the former."

DROMEDARY. [See CAMEL.]

DROMIA. A genus of Crustacea, somewhat allied to *Dorippe*, of which there are several species. The one figured (*Dromia vulgaris*) is very common in the Mediterranean; the carapace is almost globular; the two posterior pairs of legs are raised above

the others; hence the divi-
it is named NOTOPODA.
furnished with two sharp

n.—(DROMIA VULGARIS.)

hich enable the crab to hold
f sponges, medusæ, or other
ons, under which it conceals
ritish Museum collection are
ating specimens of a common
pecies (*Dromia lator*) with
so attached, into which the
back of the carapace is very

e name of the male honey-
]

[See BLATTA: PYERO-

ns.) A very extensive and
f water-birds, found in all
ld. They feed in great part
matter, such as insects and
ell as upon vegetables and
e generally seen upon the
of the interior, though they
ert to the sea-shore. Ducks
nd dive with facility; they
ll; and they can all walk,
tly with difficulty. They
stances, such as fresh-water
der aquatic plants, which
ar the surface, or at the bot-
muddy places, and worms
h they search for among the
stinguishing characters are
is shorter in proportion than
e, strong, flat, or depressed,
furnished with a nail at the
hs feet are proportionably
se of the goose kind, the
ng the longest; the legs are
ced farther backwards; the
and the body is more com-
nostrils are small and oval;
is broad, the edges near the
nged. There are numerous
genus, some inhabiting the
d others the sea.

N WILD DUCK, or MAL-
oschas), is the original stock of
nesticated Duck, and appears
laimed at a very early period.
asures about twenty-three
h, thirty-five in breadth, and
and a half in *weight. The*
lowish green colour, and the
are a deep shining green: a

circle of white surrounds the neck, to about three-fourths of its circumference: the upper part of the breast and shoulders is of a deep vinous chestnut; the breast and belly are gray, marked with transverse speckled lines of a dusky hue; and the scapulars are white, elegantly barred with brown. The spot on the wing is a rich purple; and the tail is composed of twenty-four feathers. The male of this species is distinguished by four middle feathers, which are black, and strongly curled upwards; but of these the female is destitute. Indeed the plumage of the female partakes of none of the male's beauties, except the spot on the wings. She makes her nest, lays from ten to sixteen greenish-white eggs, and rears her young generally in the most sequestered mosses or bogs, far from the haunts of man, and hidden from his sight among high grass, reeds, and bushes. Like the rest of the Duck tribe, the Mallards, in prodigious numbers, quit the north at the end of autumn, and, migrating southward, arrive at the beginning of winter in large flocks, and spread themselves over all the loughs and marshy wastes in the British isles. They pair in the spring, when the greater part of them again retire northward to breed; but many straggling pairs stay with us: they, as well as preceding colonists of their tribes, remain to rear their young, who become natives, and remain with us throughout the year.

WILD DUCK.—(ANAS BOSCHAS.)

The flesh of the Wild Duck is held in general estimation, and various methods are resorted to, in order to obtain these birds in quantities. To describe even a tithe part of these various contrivances is not our purpose; but it is necessary to state that the *decoy* is by far the most favourite method, and is likely long to continue so, as by that species of stratagem Wild Ducks are taken by thousands at a time; whereas all the other schemes of lying in ambush, shooting, baited hooks, wading in the water with the head covered, &c., are attended with much watching, toil, and fatigue, and are also comparatively trifling in point of success. They abound in Lincolnshire, and are there taken in great numbers. These decoys are usually thus prepared and conducted:—It is generally made where there is a large pond surrounded with wood, and beyond that a marshy and uncultivated country. On the south and north sides of the pond, two *or three ditches* or channels should be *made, broader towards* the water, and gra*dually narrowing* till they terminate in a *point*: these channels should be covered

over with nets, supported by hooped sticks, so as to form a vault or arch growing narrower and narrower to the point, where it should be terminated by a tunnel net: along the banks of these netted channels many hedges should be made of reeds slanting to the edges of the gutters, their acute angles being toward the side next the pool; and the whole apparatus should also be concealed from the pool by a marginal hedge of reeds, behind which the operations of the fowler are conducted. Provided with a number of Ducks termed decoys, which are rendered tame by education, and accustomed to attend their master on being summoned by a whistle, the fowler sets them to feed at the mouths of the pipes. No sooner does the evening commence, than the *decoy vives*, to use the language of fowlers, and the wild fowl feed during the night. Should the evening be still, the noise of their wings during their flight is heard at a considerable distance, and produces no unpleasing sensation. The fowler, whenever a fit opportunity offers, and he sees his decoy covered with fowl, walks about the pond, and observes into what pipe or channel the assembled ducks may be enticed or driven with the greatest facility: then, throwing hemp-seed, or some similar allurement which will float on the surface, at the entrance of the pipe, and along its extent, he whistles to his decoy-ducks, which instantly obeying the summons, approach, in expectation of being fed as usual; whither also they are followed by a whole flock of the wild ones, unsuspicious of their meditated ruin. However, their sense of smelling being extremely acute, they would speedily discover the ambuscade, did not the fowler hold a piece of burning turf to his nose, against which he constantly breathes, and thereby prevents the effluvia of his person from affecting their very exquisite senses. The Wild Ducks, therefore, in following the decoy ones, are conducted by them into the broad mouth of the pipe, without the smallest suspicion of danger, the fowler being still hid behind one of the hedges; nevertheless, when they have proceeded a short way up the pipe, and perceive it to grow narrower, they begin to apprehend danger and endeavour to return; but in this attempt they are prevented by the fowler, who now makes his appearance at the broad end below. Thus surprised, intimidated, and utterly unable to rise because of the surrounding net, the only remaining way of escape seems to be through the narrow-funnelled net at the bottom; into which they fly, and are instantly taken.

Pennant had an account sent him of the produce of ten decoys, which, in one winter, amounted to thirty-two thousand two hundred. In Picardy in France, also, vast numbers are taken in decoys, and sold in the Paris market, where, in one season, 30,000 francs have been paid for the produce of the small lake of St. Lambert. Wilson, the celebrated American ornithologist, enumerates several simple and effective contrivances made use of in America for the capture of these wary birds. In some ponds frequented by them, five or six wooden figures, cut and painted to represent ducks, and sunk by pieces of lead nailed to the bottom, so as to float at the usual depth on the surface, are anchored in a favourable position to be raked from a concealment of brush, &c. These attract the passing flock, which alight, and thus expose themselves to certain destruction. In winter, when detached pieces of ice are occasionally floating in the river, some of the sportsmen on the Delaware paint their boats white, and laying themselves flat in the bottom, direct them almost imperceptibly near a flock, before the ducks have distinguished them from a floating piece of ice. On land, another stratagem is sometimes practised with great success. A tight hogshead is sunk in the marsh, or mud, near the place where ducks are accustomed to feed at low water, and where, otherwise, there is no shelter; the edges and top are carefully concealed with tufts of long coarse grass, and reeds or sedge. From within this the sportsman watches his collected prey, and usually commits great havoc. In China, the sportsman covers his head with a calabash, pierced with eye-holes, and, thus equipped, wades into the water, keeping only his head above the surface, and, on arriving amidst a flock, seizes them by the legs, fastens them to his girdle, and takes as many as he wishes, without disturbing the rest.

The TAME DUCK. Some individuals in a domestic state appear in nearly the same plumage as the wild ones; others vary greatly from them, as well as from each other, and are marked with nearly every colour; but all the males or drakes still retain the curled feathers of the tail. The Tame Duck is, however, of a more dull and less elegant form and appearance than the Wild, domestication having deprived it of its lofty gait, long tapering neck, and sprightly eyes. Tame Ducks are reared with more facility than perhaps most other domestic animals. The very instincts of the young direct them to their favourite element; and though they are sometimes hatched and conducted by hens, they seem to concern the admonitions of their leaders; a circumstance which seems to indicate that all birds receive their manners rather from nature than education, and attain their various perfections without the help of any other guide.

There appears to be good reason for placing duck-eggs under a hen. The Duck generally proves a heedless, inattentive mother; for she frequently leaves her eggs till they become corrupted, and even seems to forget that she is entrusted with the charge; she is also equally regardless of her young brood when they are produced; for she only leads them forth to the water, and then seems to think she has made sufficient provision for them. The hen, on the contrary, who is an indefatigable nurse, broods with unwearied assiduity, and generally hatches a duckling from every egg with which she is entrusted: she does not, indeed, conduct her young to the water, because that is contrary to her nature; but she always keeps a watchful

r them when they approach the
Should the rat, the weasel, or other
enemy of the feathered tribe, attempt
any of them, the hen instantly af-
ent her best protection; and, leading
positious brood to the house when
th paddling, there nourishes them
the instinctive ardour of maternal
"The village school-boy," as Be-
ys, "witnesses with delight the antic
nts of the shapeless little brood,
es under the charge of a foster-
who, with anxious fears, paddles by
k, and utters her unavailing cries,
e Ducklings, regardless of her warn-
d rejoicing in the element so well
to their nature, are splashing over
er beneath the pendent foliage; or,
pursuit, snap at their insect prey
surface, or plunge after them to the
scene, meanwhile, are seen perpen-
y suspended, with the tail only above
ngaged in the general search after

are many different varieties of the
Duck: the most obvious distinction,
, between the wild and tame species
e colour of their feet; those of the
ing black, and the wild yellow. As
re observed, the common species of
Ducks derive their origin from the
, and may be traced to that fowl by
characters. Tame Ducks are an
ly advantageous kind of poultry;
subsist on scattered corn, the refuse
able and animal substances, worms,
nd insects. They lay a great num-
ggs annually; require very little at-
e when sitting; and, with respect to
gs, they may be easily fattened in
se of three or four weeks with any
pulse or grain and water.

OVY DUCK, or MUSK DUCK.
moschata.) This bird, which takes
from its musky smell, and not from
originally obtained from Russia, as
sed, is upwards of two feet in length.
wild state it is entirely of a black
with glosses of blue and green, and
ing-coverts; but when domesticated
very considerably: its usual ap-
, however, may be thus described.
wn of the head is slightly tufted, and
he cheeks and fore part of the neck
regularly marked with black; the
iefly white, and the general colour
rest of the plumage deep brown,
and glossed with green on the back,
ills, and tail, the two outer feathers
atter, and the three first primaries
hite: the legs and feet are short,
d red. They are more prolific and
r than other ducks; and their eggs,
e frequently tinged with green, are
d rounder than those of other spe-

AS-BACKED DUCK, or PO-
. (*Aythya vallisneria.*) The zoolo-
debted to the indefatigable Wilson for
account of this much esteemed spe-
he Canvas-back is two feet long, and
et wide, and when in good order

weighs three pounds. The beak is large, and of a glossy black; the head and part of the neck of a rich glossy reddish-chestnut hue, ending in a broad space of black that covers the upper part of the breast: back, scapulars,

CANVAS-BACKED DUCK.
(AYTHYA VALLISNERIA.)

lower part of the breast, and belly, white, faintly marked with an infinite number of transverse wavy lines, or points: wing-coverts gray spotted: tail very short, and pointed; legs and feet very pale ash. The female is smaller, and not so brightly coloured as the male. These birds arrive in the United States, from the north, about the middle of October, and, principally, assemble in the numerous rivers in the neighbourhood of the Chesapeake bay. When they first arrive they are very lean; but from the abundance of their favourite food, they become fat about November. From the great demand for these ducks, and the high price they fetch, various methods are employed to decoy them.

Besides the species we have described, there are many, for which we can only find room for very brief notices. The SCAUP DUCK (*Fuligula marila*), somewhat smaller than the common duck. In North America, a variety of this species is better known by the name of the Blue-bill, and is common both to the fresh-water rivers and sea-shores in

SCAUP DUCK.—(FULIGULA MARILA: VAR.)

winter, those which frequent the latter being generally much the fattest, on account of the greater abundance of food along the coast. The GOLDEN-EYE (*Clangula glaucum*), the bill of which is black, short, and broad at the base; the head is large, and of a deep black hue, glossed with green; and at each angle of the mouth there is a large white spot. The BLACK DUCK, or SCOTER (*Oidemia nigra*); a bird whose flavour is so rank and fishy, as to be exempted, with a few others, from the interdict which forbids Roman Catholics the use of animal food on certain days, on the supposition of their being

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cold-blooded, and partaking of the nature of fish. The PIED DUCK (*Anas Labradoria*); a beautiful and rare species, peculiar to America. CHINESE DUCK (*Anas galericulata*); a remarkable bird somewhat less than a widgeon. The SUMMER or WOOD DUCK (*Aix sponsa*); not more remarkable for its

SUMMER DUCK.—(AIX SPONSA.)

great beauty, in which it stands pre-eminent, than for its habits, its migrations being directly opposed to those of the other species. AUTUMNAL DUCK (*Anas autumnalis*); native of the West India islands and South America, where the inhabitants frequently keep them in the farm-yards. TREE DUCK, or WHISTLING DUCK, (*Anas arborea*); this also is an inhabitant of the West India islands and the adjacent continent of America. We learn from Mr. Gosse's "Birds of Jamaica," that its singular whistling note is peculiarly shrill, and is uttered in its crepuscular flights to and from its feeding places, and also when it is alarmed. He also says these birds are much dreaded by those who plant Guinea-corn; and that "numerous flocks of both young and old birds frequent the millet-fields from December till the end of February, when this corn is reaped. They are most busy in their depredations on moonlight nights; and as they sweep round in circles, their remarkable whistle always betrays their movements." Another remarkable peculiarity is thus recorded: "The Whistling Duck endeavours to save her young, when pursued, by throwing herself into the man's way; that is, by rushing up so close to him as to draw his attention, that her young, who are very active, may have an opportunity of escaping. Accordingly, the man, seeing the duck so near him, looking upon her as a much better prize than the young ones, leaves pursuing the ducklings, and endeavours to catch the subtil dame, who runs before, but takes special care to keep out of his reach; yet stopping in front of him occasionally, to make him renew the pursuit, till the young are entirely out of danger; when she flies away, leaving her pursuer to fret at his double disappointment." LONG-TAILED DUCK (*Harelda glacialis*); remarkable for the long and slender feathers of its tail. This Duck is very generally known along the shores of the Chesapeake Bay by the name of the *South-southerly*, from the singularity of its cry, something imitative of the sound of those words; and also, that, when very clamorous, they are supposed to betoken a southerly wind. They inhabit the bays and coasts of North America during the winter only; are rarely found in the marshes, but keep in the channel, diving for small shell-fish, which are their principal food. In passing to and from the bays, sometimes in vast flocks, particularly towards evening, their loud and confused noise may be heard in calm weather at the distance of several miles. They fly very swiftly, take short excursions, and are lively restless birds. Their native regions are in the north, where great numbers of them remain during the whole year; part only of the vast family migrating south to avoid the severest rigours of that climate. They are common to the whole northern hemisphere. In the Orkneys they are met with in considerable flocks from October to April; frequent in Sweden, Lapland, and Russia; and are said to breed at Hudson's Bay, making their nest among the grass near the sea, like the eider duck, and about the middle of June lay from ten to fourteen bluish-white

LONG-TAILED DUCK.—(HARELDA GLACIALIS.)

eggs, the size of those of a pullet. When the young are hatched, the mother carries them to the water in her bill. The nest is lined with the down of her breast, which is accounted equally valuable with that of the eider duck, were it to be had in the same quantity. They come to England only in very severe winters, and then but in small straggling parties. TUFTED DUCK (*Anas cristata*), found in the arctic regions of both continents, and migrating to southern countries in the winter: on the top of the head is a crest consisting of long and slender feathers, which, with the head, neck, and breast, are black, glossed with violet and green. PINTAIL DUCK (*Dafila acuta*); remarkable for the pointed form of its tail: it is abundant in both hemispheres. The NILOTIC MUSK DUCK (*Anas Nilotica*); between the size of the Pintail Duck and the Goose, but stands higher on its legs. It inhabits the Nile, in Upper Egypt; is easily tamed, and lives among other domestic poultry. GREY-HEADED DUCK (*Somateria spectabilis*); with red bill, legs, and feet: native of Hudson's Bay. The GREAT BLACK DUCK (*Oidemia perspicillata*); a species considerably larger than the common Duck. STELLATED DUCK; a species distinguished by its eyes, which are placed higher than usual in an oval black spot; but its principal characteristic is a large white star on its back. The MADAGASCAR DUCK; a large and brilliantly-coloured species: the bill of a yellowish-brown colour; the head and neck of a dusky green; and the back is of a deep purple;

feathers of the wings are adorned
d eyes; and the legs and feet are of
ge hue. The HOOK-BILLED DUCK
adunca), which differs but little from
mon Wild Duck except in the bill.
RECKLED DUCK (*Anas nervosa*); a
re species which inhabits the neigh-
od of Swan River, in Australia, but
scarcity it is little known either to
ntists or the natives. According to
uld's description of the specimen in
ession, the whole of the plumage is
own, minutely freckled and spotted
regular oblong marks of white in
ection of the feathers; the under
the same, but lighter and tinged
ff; wings without a speculum; pri-
plain brown; irides light brown;
mish gray, becoming much darker at
; legs bluish green.

ONG. (*Halicore.*) A marine animal,
rous in regard to its food, and fish-
its form. It ranks among the *Cetacea*;
t seven or eight feet in length; and

DUGONG.—(HALICORE DUGONG.)

n large permanent incisive teeth in
per jaw, and four molar teeth above
low. It is a native of the Indian seas,
common among the islands of the
Archipelago, and visiting also the
of New Holland. Its flesh is said to
ter, and not unlike beef. Professor
in the Appendix to Jake's Voyage of
S. Fly, has described a new species
he Eastern seas.

LIN. (*Polidus.*) A genus of birds
ing to the *Scolopendrae* or Snipe tribe.
nulles in appearance resemble larks;
ly in troops near the coast; and lay
eggs in the sand. There are several
; but it will be sufficient to describe
them:—RED DUNLIN. (*Polidus sub-*
ra.) This bird is about eight inches in
; top of the head is black, edged with
; the forehead and throat are white
with brown; the nape is red, with
longitudinal black dashes; the neck,
, and under parts are red chestnut,
lines marked with black spots or
ated with white; tail coverts white,
ously rayed with black and red;
ck, scapulars, and large wing-co-
f a deep black; on the edge of the
rs is a range of angulated bright red
the greater portion of which are ter-
ed with bright ash; the tail is of a
ash, bordered with white. The beak
k; and the legs are brown. This bird
ative of most parts of Europe, and is
sometimes seen on the British coasts. It
rarely appears at any considerable distance
inland; but migrates in the spring and
autumn. It lays four or five eggs, of a dirty
white colour, spotted with brown; and its
flesh is esteemed a delicacy. The names
of the other species are the PIERRE DUNLIN,
(*Polidus variabilis*); LITTLE DUNLIN (*Po-*
lidus pusillus); TEMMINCK'S DUNLIN (*Po-*
lidus Temminckii); MINUTE DUNLIN (*Polidus*
minuta); and the St. DOMINGO DUNLIN,
(*Polidus Dominicensis*).

DYNASTIDÆ. A family of Lamellicorn
Coleoptera, comprising several beetles re-
markable for their size, strength, and for-
midable appearance. The males are pre-
eminently distinguished by various singular
protuberances, horns, or tubercles, arising
from the head or thorax, and often from
both of these parts of the body. "It must
be borne in mind, however," as Mr. West-
wood observes, "that these horns are im-
movable portions of the horny skeleton, and
offer no real analogy with the horns of the
mammalia; although it is interesting, in
respect to the analogies existing in remote
tribes of the animal kingdom, that the quad-
rupeds which are cornuted are herbivorous,
and as comparatively harmless as the Dy-
nastidæ." They chiefly inhabit the tropical
regions, excavating burrows in the earth,

HERCULES BEETLE.—(DYNASTES HERCULES.)

where they conceal themselves during the
day, or reside in the decomposed trunks of
trees; and they are generally of a dark rich
brown or chestnut colour. On the approach
of night they leave their retreats, and run
about the footpaths in woods, or fly around
the trees to a considerable height, with a

loud humming noise. It is believed that they subsist principally upon putrescent wood and the detritus of other vegetable matter. Among the most remarkable may be mentioned the *Dynastes Hercules*, or HERCULES BEETLE. It is usually about four, but sometimes measures not less than five, or even six inches in length: the elytra are of a smooth surface, of a bluish or brownish-gray colour, and generally marked with several small round deep-black spots, of different sizes: the head and limbs are jet black; from the upper part of the thorax proceeds a horn or process of enormous length in proportion to the body, sharp at the tip, curving slightly downwards, and furnished throughout its whole length with a fine, short, velvet-like pile, of a brownish orange colour; from the front of the head proceeds also a strong horn, about two-thirds the length of the former, toothed on its upper surface, but not covered with any of the velvet-like pile. This species is a native of several parts of South America, where great numbers are sometimes seen on the tree called the Mammæa Americana, and *have been said by some travellers* to rasp off the rind of the slender branches by working nimbly round them with the horns, till they cause the juice to flow, which they drink to intoxication, and thus fall senseless from the tree. This, however, has a very fabulous air, nor, although the account has been often repeated, do we find it any where sufficiently well authenticated to depend upon; in short, the structure of the horns would render it impossible. The female is destitute both of the frontal and thoracic horn, and but for her large size would hardly be regarded as her lord's mate.

The next species, *Megasoma elephas*, or ELEPHANT BEETLE, is also a native of South

ELEPHANT BEETLE.—(MEGASOMA ELEPHAS.)

America (having been brought from Venezuela *by Mr. David* Dyson), though for a *long time it was erroneously* supposed to be *a native of Africa.* Some specimens are at least three inches long. Our figure ... show better than any description its ... and general appearance. It is covered ... a yellowish gray down, which is very ... and thickly set: the head is furnished ... a long arched horn, which is bifid at the ... tremity, of a blackish colour, with a ... tubercle at the base, directed forward ... the thorax has two small smooth tuber... in the middle, and a strong somew... oblique horn on each side: the front ... are considerably arched. The next spec... figured is from the Eastern Islands. It ... the *Chalcosoma Atlas*, or Atlas Beetle. ... is of a highly polished metallic surface

ATLAS BEETLE.—(CHALCOSOMA ATLAS.)

the horns on the head and thorax vary ... much in the different specimens; but ... figure is taken from a specimen in wh... these prominences are well developed. ... seems to be far from uncommon in the Phil... pine Islands. There are fine specimens o... and many other species of *Dynastidæ* ... the collection of the British Museum. ... may here say that the females of the D... nastidæ are devoid of spines or projecti... on the head and thorax, just like our Brit... *Onthophagi*, and that, like them, the ma... have the head more or less armed, accord... to the quality and quantity of the food th... have taken in the larva state. This observ... tion, as far as regards European Lamellico... beetles, is made by M. Mulsant of Lyons, ... his excellent and extensive work on the C... leopters of France.

DYTISCUS: DYTISCIDÆ. A genus ... family of insects belonging to the aqua... carnivora; which during their larva ... perfect states live in water, but quit t... element to undergo their metamorphos... and to pass the time of their pupa condit... The *Dytiscus marginalis* (one of the larg... European species) is common in stagna... waters, with an inch or rather more in leng... and is of a dark olive colour, with

wing-sheaths bordered with
e larva of this insect in shape
resembles the shrimp tribe than
parent. It measures, when full
two inches and a half in length,
a pale yellowish-brown colour,
h degree of transparency: the
y large, rather flat, and is fur-
a pair of very strong curved
h which it attacks its prey: its
nder, and its abdomen is very
y lengthened, and ciliated on
e tail, which terminates in a
or process. The larva is very
racious, committing great ravages
among water insects, but even
ll fishes, and is therefore con-
of the most mischievous animals
nfest a fish-pond. When full-
larva betakes itself to the ad-
ks, where it changes into a chry-
hitish colour. There are nume-
of this genus, but none so large
ive as the one here described:
m are, by comparison, extremely

A WATER-BEETLE.
YDATICUS INTERMEDIUS.)

ustration of this family, we have
fter Sturm) the *Hydaticus inter-*
onging to a genus of *Dytiscidæ*, of
e species are found in this country.
n has given in "the Zoologist" a
f all the British species of this
the work of Dr. Aubé of Paris,
s of the numerous species and
Water Beetles will be found, while
s of the "List of Hydrocanthari
ish Museum Collection" will be
ery extensive and how universally
l is the family of Water Beetles.

N, or CHINESE ANTELOPE.
gutturosa.) This species of An-
abits China, Thibet, and Tartary,
gurating the dry and rocky plains,
ng on the scanty herbage which
n localities supply. The length of
l is about four feet and a half: the
e inches long, of an opaque yellow
d having a backward direction,
ned nearly to the tips, and diverge
ly upwards, though the points
rds each other. The head is rather
he nose obtuse; the ears small and
and on the middle of the neck
arge protuberance, occasioned by
ar structure of the windpipe. It
ny low on the upper parts, and
white beneath; but in winter the hair grows long, thick, and hoary. This species, which the Chinese call *Whang Yang*, or Yellow Goat, is extremely swift and active, but naturally shy and timid. During the winter season they herd in great numbers, but separate again on the approach of spring. The Tartars hunt them with the utmost eagerness, and esteem their flesh very delicious food: the horns form a considerable article of commerce, and are in great request among the Chinese: the female has no horns. Specimens of this Antelope are in the British Museum collection. It has never, however, been brought alive to this country.

EAGLE. (*Aquila.*) Pre-eminent for courage, strength, and boldness among predaceous birds, is the daring and majestic Eagle. This time-honoured monarch of the feathered tribes, which in the mythology of Greece and Rome was deemed worthy to rank as the chosen associate of Jupiter, was ever regarded as an emblem of dignity and might, and still has the reputation of being equally magnanimous, fierce, and voracious. What the Lion is among quadrupeds, that the Eagle is presumed to be among birds; one who disdains all petty plunder, and pursues only such prey as would seem to be worthy of conquest. This laudatory character of the king of birds, however, though true in the main, and generally acquiesced in, is, it must be confessed, more poetically descriptive than logically accurate; but while, in our zoological character, we are bound to make this admission, far be it from us to disparage the "bird of Jove," or to pluck a single plume from his upsoaring wing. Eagles are distinguished by the feathering of the *tarsi* down to the very base of the claws; and the males are smaller than the females; their plumage varying considerably, according to age and other circumstances. Of all the feathered tribe the Eagle soars the highest; and of all others also it has the strongest and most piercing sight. Though extremely powerful when on the wing, the joints of its legs being rather stiff, it finds some difficulty in rising again after a descent; yet, if not instantly pursued, it will easily carry off a goose or other bird equally large. The Eagle does not rise in the air so much for the purpose of pursuing its prey on the wing, as that it may be enabled to take an extensive survey of the country beneath; for its food does not consist so much of birds that pass most of their time in flight, as of those that live on or near the ground, and of such mammalia as it can vanquish. Buffon remarks, when speaking of the noble nature of this powerful bird, that the Eagle despises small animals, and disregards their insults; that he seldom devours the whole of his prey, but, like the lion, leaves the fragments to other animals; and, except when famishing with hunger, he disdains to feed on carrion. The astonishingly acute sight of the Eagle enables him to discern his prey at an immense distance; and, having perceived it, he darts down upon it with a swoop which there is no resisting.

It is well understood that the Eagle is

able to look stedfastly on the sun, and to sustain his most dazzling rays: which alone must give him a decided superiority over every other denizen of the air: this is accounted for by his being furnished with double eyelids, one of which may be shut while the other is open, so that the glaring light of any dazzling object may be rendered more easily supportable. The nest is composed of sticks, twigs, rushes, heath, &c., and is generally placed upon the jutting ledge of some inaccessible precipice; or in forests, near some lofty tree. The largest species of Eagles seldom lay more than two eggs, and the smallest never more than three.

The Imperial Eagle. (*Aquila imperialis.*) This is the largest species of Eagle known, measuring three feet and a half from the tip of the bill to the end of the tail; and to it may be referred all the accounts of the ancients respecting the strength, courage, and magnanimity of these birds. Its colour above is rufous gray, barred with black, the black prevailing most on the wings: the head is strongly crested with long gray feathers, the two middle ones being five inches long; the tail is gray, barred and spotted with black, and tipped with rufous: the under parts of the bird are pale cinereous, very soft and downy; the beak and cere black; the feet and legs yellow. It is a native of South America, inhabiting the deep recesses of the forest; and has the reputation of being extremely bold and ferocious.

The Golden Eagle. (*Aquila chrysaëta.*) This bird is the largest and noblest of the European Eagles; its length being three feet three inches, the extent of its wings seven feet six inches, and its weight from twelve to sixteen pounds. The bill is of a deep lead colour, with a yellow cere; eyes large, deep sunk, and covered by a projecting brow; the irides golden hazel-colour, bright and lustrous. The general colour of the plumage is deep brown, mixed with tawny on the head and neck, and the feathers on the back being finely shaded with a darker hue. The wings, when closed, reach to the end of the tail; the quill-feathers are chocolate-coloured, with white shafts; and the tail brown, the base being generally marked with irregular ash-coloured bars or blotches: the legs are yellow, short, and very strong, being three inches in circumference, and feathered to the very feet, which are covered with large scales, and armed with most formidable claws. It occurs in various mountainous parts of Europe and Asia, and also, though more rarely, in America; in Ireland, Scotland, and Wales, it has also occasionally been found. The eyrie or nest of the Golden Eagle is extremely large and strong, being composed of twigs and branches, interlaced and covered by layers of rushes, heath, &c., and built on the summits of rocks or lofty cliffs. The female lays two or, at most, three eggs, one of which is said to be generally unprolific. The longevity of this species is said to be great indeed, instances being quoted of its having survived more than a century.

The Ring-tailed Eagle (the *Falco fulvus* of Buffon), though described as a separate species by him, is no other than the young bird of one and two years of the preceding. Its colour is a deep brown, the base of the tail being distinguished by a white ring; the bill is of a dark horn-colour, the upper mandible, which is arched, hanging over the lower one about an inch, and having an angle or tooth on each side; and the feet are feathered to the toes. The breast is marked with white triangular spots in the middle of each feather: between the bill and the eyes there are spaces of bare skin of a dirty hue, thinly set with small black hairs: and the tail, which is of an equal length with the wings when closed, is white, except the tips of the feathers, which are black, or dark brown; and the coverts under the tail are a reddish brown or bay. The toes are very thick and strong, and covered with yellowish scales: and the talons, which are black and very powerful, bend almost into semicircular figures, and terminate in very sharp points.

"It is held," says Dr. Richardson, "by the aborigines of America, as it is by almost every other people, to be an emblem of might and courage, and the young Indian warrior glories in his Eagle plume as the most honourable ornament with which he can adorn himself. Its feathers are attached to the calumets, or smoking pipes, used by the Indians in the celebration of their solemn festivals, which has obtained for it the name of the Calumet Eagle. Indeed, so highly are these ornaments prized, that a warrior will often exchange a valuable horse for the tail feathers of a single eagle." He further observes that the mature British Golden Eagle has a darkish brown tail and wings, blackish-brown back, clouded with brownish-black, and a paler and brighter-brown head. The identity of the Ring-tails with the Golden Eagles may now be considered unquestionable, the observations of so many late ornithologists concurring to establish the fact. And though Dr. Richardson says that the Golden Eagle is seldom seen farther to the eastward than the Rocky Mountains, M. Audubon asserts that he has seen it on the coast of Labrador, and various other parts of the United States. It inhabits Russia, Iceland, and Germany, and is said to occur in Northern Africa and Asia Minor. It is also frequently met with in Scotland, and its northern and western islands; in Ireland also, though much less often; and occasionally even in the western counties of England.

The Royal Eagle (*Aquila regalis*) is a bird of great beauty, having an elegantly varied plumage and commanding attitudes; in fact, the account given of it by M. Sonnini, in his edition of Buffon's Natural History, would lead to the belief that it is much larger and more ferocious than any one of which we have a knowledge. His description of it is to this effect:—The head is large, and furnished with a crest in form of a casque; the bill long; the eyes bright and piercing; the claws black, crooked, and of

gth of the middle finger: the back, and tail are brown, spotted with and variegated with whitish or yellow-aks; the belly white, the feathers very soft, and equal in elegance to of an egret. It flies with majestic y, and such is the expanse of its wings, sometimes strikes and kills its prey em before it touches it with its claws. ngth is such as to enable it to tear ns in an instant the largest sheep; ursues, almost indiscriminately, wild s; but its principal food consists of a lar kind of monkeys, called *Guaribas*, t instantly kills, and devours with dinary voracity. Its general residence fty mountains, and it builds its nest highest trees, employing for their ction the bones of the animals it has ured, and some dry branches of trees, it binds together with the ends of rs. It is said to lay two or three eggs, are white, spotted with reddish-brown. lefly found about the borders of the mason. Many virtues are attributed ernt feathers. Such is the account, ome slight abridgment, of the de-n given by Sonnini, and copied by the whole resting on the authority Laurent Alvarez Roxo de Postflitz, guese ecclesiastic at Brazil.

GE-TAILED EAGLE. (*Aquila fucosa.*) oble bird is the species of Eagle com-Australia, "being of course," as Mr. observes, "more plentiful in such ts as are suited to its habits, and where aracter of the country is congenial to imals upon which it subsists." He r says, that although he has not yet t in any collection, either from the

E-TAILED EAGLE.—(AQUILA FUCOSA.)

rn portion of Australia or any other y, "in all probability it will hereafter nd to extend its range as far towards ogion in the southern hemisphere as ilian Eagle (*Aquila chrysaëta*) does in the northern: the two birds being, in fact, beautiful analogues of each other in their respective habitats, and doubtless performing similar offices in the great scheme of creation." In courage, power, rapacity, and size, they are also very similar; but the lengthened and wedge-shaped form of its tail gives to the Australian bird a far more pleasing and elegant contour. One, but by no means the largest, of those which were killed by Mr. Gould, weighed nine pounds, and measured six feet eight inches from tip to tip of the opposite pinions. The Wedge-tailed Eagle frequents the interior portions of the country rather than the neighbourhood of the sea; preying indiscriminately on all the smaller species of Kangaroo which tenant the hills and plains; and whose retreats, from the wonderful acuteness of its vision, it descries while soaring and performing its graceful evolutions in the air. The enterprising ornithologist, from whose splendid work we have derived the foregoing information, goes on to say, that "its tremendous stoop and powerful grasp carry inevitable destruction to its victim, be it ever so large and formidable. The breeders of sheep find in this bird an enemy which commits extensive ravages among their lambs, and consequently in its turn it is persecuted unrelentingly by the shepherds of the stock-owners, who employ every artifice in their power to effect its extirpation, and in Van Diemen's Land considerable rewards are offered for the accomplishment of the same end." He adds, that "the tracts of untrodden ground and the vastness of the impenetrable forests will, however, for a long series of years to come, afford it an asylum, secure from the inroads of the destroying hand of man: still, with every one waging war upon it, its numbers must necessarily be considerably diminished." In the adult bird, the head, throat, and all the upper and under surface of the plumage is blackish brown, stained on the edges and extremities of many of the wing and tail feathers with pale brown; back and sides of the neck rusty-red; irides hazel; cere and space round the eye yellowish white; bill yellowish horn colour, the tip black; feet light yellow. The colour of the young birds is altogether lighter, and the tail is indistinctly barred near the extremity. The nests are of a very large size, built of sticks and boughs, nearly flat, and, placed on trees which from their vast height, are all but inaccessible to man. It appears that although the Wedge-tailed Eagles mostly feed on living prey, they do not scruple to feast on the carcase of a dead bullock when they find one, or refuse to devour carrion, though it may be almost in a state of putridity.

We lately saw three specimens of this very fierce Eagle in the Gardens of the Zoological Society. Their piercing eyes and enormous beaks clearly indicated their "will and power," while their restlessness was a convincing proof that they could ill brook captivity.

VULTURINE EAGLE. (*Aquila vulturina.*) The general colour of this species, which in

size is equal to the Golden Eagle, is a deep black, some of the feathers of the back having brownish edges: the bill is very strong, its tip yellow; the legs of a dirty yellow, and feathered for three quarters of their length: the tail rounded, and considerably shorter than the wings. It feeds principally on carrion, but will attack sheep, and devour them on the spot. Native of Caffraria.

Crowned Eagle. (*Aquila coronata.*) This species is about one-third less than the generality of Eagles, but of proportionate boldness and strength. It is a native of Africa, and is said to be principally seen in Guinea. The circles round the eyes are of a deep orange colour; the fore part of the head, the space round the eyes, and the throat, are covered with white feathers, with small black spots: the hinder part of the head and neck, the back and wings, are of a dark brown, the outer edges of the feathers being lighter: the ridge in the upper part, and the tips of some of the lesser covert-feathers of the wings, are white: the tail is brown, barred across with black, and on its under side appears of a dark and light ash-colour: the breast is of a reddish-brown, with large transverse black spots on the sides; the thighs and legs, down to the feet, are covered with white feathers, beautifully marked with round black spots. The feet and claws are very strong; the former covered with scales of a bright orange colour, and the latter being black. It takes its name from raising the feathers on the hinder part of the head in the form of a crest or crown.

The Superb Eagle (*Falco superbus*) inhabits the vast forests of Guiana, and is distinguished by a kind of pendent naked craw, like some of the vultures. From the tip of the bill to that of the tail is about twenty-five inches: the upper part of the head and the crest are brown: the back and wings brown, with a few transverse tawny bars; and the tail is alternately barred with black and pale brown: the sides of the neck are tawny; the throat and breast white; the abdomen white, with transverse black stripes, interrupted by the white ground-colour: the feathers of the thighs and legs are white, striped with black.

The Cheela Eagle. (*Falco Cheela.*) This species is a native of India, where it is called Cheela. It is of a stout make, two feet long, and of a deep brown colour; but on each side of the head there is a mixture of white: the wing-coverts and thighs are marked with small white spots, and the tail is crossed in the middle by a white band: the bill is blue at the base, and black at the tip.

The White-tailed Eagle. (*Haliætus albicilla.*) This bird inhabits all the northern parts of Europe, and is found in Scotland and other parts of Great Britain. The beak, cere, and eyes are of a pale yellow; the sides of the head and neck a pale ash, mixed *with reddish-brown*; general colour of the *plumage brown*, darkest on the upper part *of the head*, neck, and back: quill feathers very dark; breast irregularly mark white spots; tail white; legs of yellow, and claws black. It is stro very ferocious. It usually lays two eggs, building its nest upon lofty tre

The White-headed Sea Eagle. *aetus leucocephalus.*) This distinguis is about the size of the Golden Eagle, t it bears a considerable resemblanc however, of a lighter colour, and the only feathered a little way below th The bill is large, much hooked, and A row of strong bristly feathers han from under its lower mandible, w has sometimes been termed the

American, or White-headed sea (Haliaetus leucocephalus.

Eagle. It preys chiefly on fish, w seizes by darting down upon them swimming near the surface: it als sionally preys on birds and other a The American variety is superior in the European; frequenting the nei hood of the sea, and the shores and lakes and large rivers, which local prefers, from his great partiality Wilson, the American ornithologi picturesquely describes this powerful "Elevated upon a high, dead limb gigantic tree, that commands a wide the neighbouring shore and ocean, h calmly to contemplate the motion various feathered tribes that pursu busy avocations below—the snow-wh slowly winnowing the air; the busy coursing along the sands; trains of streaming over the surface; silent and ful cranes, intent and wading; sh crows, and all the winged multitu subsist by the bounty of this vast lib gazine of nature. High over all thes one, whose action instantly arrests Eagle's attention. He knows him t fish-hawk, settling over some devote of the deep. His eye kindles at the sig balancing himself with half-opened w the branch, he watches the result. rapid as an arrow from heaven, descr distant object of his attention, the its wings reaching the ear as it disap the deep, making the surges foam. At this moment the eager looks of th are all ardour, and, bevelling his f flight, he sees the fish-hawk once more ing, struggling with his prey, and m in the air with screams of exultation are a signal for our hero, who, launch the air, instantly gives chase; soon the fish-hawk; each exerts his ut

nt above the other, displaying in the outre the most elegant and sublime l evolutions. The unincumbered Eagle lly advances, and is just on the point of ing his opponent, when, with a sudden am, probably of despair and honest exe- on, the latter drops his fish: the Eagle, ng himself for a moment, as if to take a certain aim, descends like a whirlwind, ches it in his grasp, ere it reaches the r, and bears it silently away to the ls." When this bird has fasted for some , its appetite is extremely voracious and criminate: even the most putrid carrion, nothing better can be had, is accept- The nest of this species, formed of sticks, sods, moss, hay, &c., is usually d in a lofty tree, in a swamp or morass; as it is increased and repaired every n, becomes of great size. Fish are daily nd to the nest in such numbers, that they times lie scattered round the tree; and dour is very offensive for a considerable nce round it.

AGLE-OWL. (*Bubo.*) [See OWL.]

AR-SHELL. (*Haliotis.*) A genus of alve Mollusca, the shell being of a ond shape, perforated with small holes ne side, and somewhat resembling the an ear, its base being characterised by ry wide mouth or aperture, the largest y shell except the Patella or Limpet. genus sometimes yields small pearls, rudiments of which are frequently seen use shells which have not brought them erfection. The outside is generally h, worn, or covered with marine sub- ces; the inside presents the same ena- ed appearance as mother-of-pearl, and hits the most beautiful colours. The with which the shell is perforated are he passage of the lobes of the animal's tle, and are made at regular intervals increases in size: when, however, a one is formed, the one nearest the spire ned up. The head of the animal is

CHANNELLED EAR-SHELL.
(HALIOTIS CANALICULATA.)

, having two long round tentacula, with at the base on footstalks; foot very , having the margin fringed all round. is state of rest, it is able to adhere with nearly to the substance it is fixed upon as to be removed with great difficulty, although it can detach itself with ease. It is always found near the surface of the water. There are several species of this shell: the one termed the Great Ear-shell is five inches long and nearly three wide; its shape is an irregular oval, the end where the spiral turn is placed being the largest. It is chiefly found in the East Indies.

EARTHWORM. (*Lumbricus.*) An Annelide, of which there are doubtless many species; characterised by a long cylindrical body, divided by transverse furrows into a great number of rings, and by a mouth without teeth: they have neither eyes, tentacles, gills, nor cirrhi. The common well-known species (*Lumbricus terrestris*) attains nearly a foot in length, and is composed of upwards of one hundred and twenty rings. They are very abundant, piercing and traversing the ground in every direction, subsisting on roots, woody fibres, animal matter, and other organized substances. It is well known that they swallow earthy matter, and that having separated the serviceable portion, they eject at the mouth of their burrows the remainder in little intestine-shaped heaps, or worm-casts.

Though a small and despised creature, the Earthworm is a most important one in the operations of nature. When it is boring, it insinuates its pointed head between the particles of the earth, amongst which it penetrates like a wedge: and in this position the anterior part of the body is fixed by the spines, of which there are four pairs on each segment: the hinder parts are then drawn forwards by a shortening of the body; which swells out the anterior segments, and forcibly dilates the passage into which the head has been already thrust. By the frequent repetition of this process, the little animal more easily permeates hard substances than could be possibly conceived; and by the united labours of myriads, the earth is lightened, and vegetation thereby wonderfully assisted. Mr. Knapp, in his 'Journal of a Naturalist,' thus speaks of the Earthworm:—"This animal, destined to be the natural manurer of the soil, and the ready indicator of an improved staple, consumes on the surface of the ground, where they soon would be injurious, the softer parts of decayed vegetable matters, and conveys with the soil the more woody fibres, where they moulder, and become reduced to a simple nutriment, fitting for living vegetation. The parts consumed by them are soon returned to the surface, whence, dissolved by frosts and scattered by rains, they circulate again in the plants of the soil—'death still producing life.' Thus eminently serviceable as the worm is, it yet becomes the prey of various orders of the animal creation, and perhaps is a solitary example of an individual race being subjected to universal destruction. The very emmet seizes it when disabled, and bears it away as its prize: it constitutes throughout the year the food of many birds; fishes devour it greedily; the hedgehog eats it; the mole pursues it unceasingly in the

pastures, along the moist bottoms of ditches, and burrows after it through the banks of hedges, to which it retires in dry seasons. Secured as the worm appears to be by its residence in the earth from the capture of creatures inhabiting a different element, yet many aquatic animals seem well acquainted with it, and prey on it as a natural food, whenever it falls in their way; frogs eat it; and even the great water-beetle (*Dytiscus marginalis*) I have known to seize it when the bait of the angler, and it has been drawn up by the hook. Yet, notwithstanding this prodigious destruction of the animal, its increase is fully commensurate to its consumption, as if ordained the appointed food of all."

In White's History of Selborne the valuable services of the Earthworm are detailed at great length, and with that writer's accustomed perspicacity. Charles Darwin, F. R. S., has made many interesting observations, which have been thus stated from his published researches:—"The burrowing of Earthworms is a process exceedingly useful to the gardener and agriculturist; and these animals are far more beneficial to man in this way, than they are injurious by devouring the vegetables set in the soil. They give a kind of under tillage to the land, performing the same below ground that the spade does above for the garden, and the plough for arable land; and loosening the earth, so as to render it permeable to air and water. It has been shown, too, that they will even add to the depth of soil; covering barren tracts with a layer of productive mould. Thus, in fields which have been overspread with lime, burnt marl, or cinders, these substances are in time covered with finely-divided soil, well adapted to the support of vegetation. That this result, which is commonly attributed by the farmers to the 'working-down' of the materials in question, is really due to the action of the Earthworms, appears from the fact, that, in the soil thus formed, large numbers of worm-casts may be distinguished. These are produced by the digestive process of the worms; which take into their intestinal canal a large quantity of the soil through which they burrow, extract from it the greater part of the vegetable matter it may contain, and reject the rest in a finely divided state. In this manner, a field, manured with marl, has been covered, in the course of eighty years, with a bed of earth averaging thirteen inches in thickness.

"It is commonly supposed," says Dr. Carpenter, "that the Earthworm may be multiplied by the division of its body into two pieces, each of which will continue to live. This does not, however, appear to be the case with the common species. If it is divided across the middle, when in motion, each part will continue to move for a time: but only the piece which bears the head will be found alive after a few hours. This forms a new tail; and soon shows little sign of injury. But if the division be made near the head, the body will *remain alive*, and will renew the head; and the head, with its few attached s will die. There appears, however some species, in which this repr power is sufficiently great to produ head and body from even a small p the original; so that above two viduals have been produced in thi by the division of a single one into parts."

EARWIG. (*Forficula.*) A genu mapterous insects. The common generally called in Scotland Gos *ficula auricularia*), is about three of an inch in length, and has a s flattened body; the wings being fold veryshort and truncated elytra or w and the extremity of the abdomen with a horny forceps. When alarme sect elevates the abdomen, and ope forceps, in order to defend itself fro tack of its enemies. Though not quite perfect from the egg, the Ea quires but a very small change bef rives at that state which fits it for

EARWIG.—(FORFICULA AURICULA

generation. Its natural functions suspended; from the instant it l egg, it continues to eat, move, l pursue its prey; and a skin which a part of its body and limbs burst and gives full play to a set of w which it flies in pursuit of its ma places in which they are found a damp and cool situations, under st the bark of trees, among chests which have been long undisturbed similar haunts. They seem to be as hares, and when disturbed run nearest hole, satisfied, like the qu above named, if they can get th under cover, and thus exclude the danger, even when their bodies exposed. Hence, it often happens will be found with their heads bur bottom of flowers, their forked tail up among the stamens and pistils they might escape the notice of but a botanist or an entomologist.

Mr. Newman gives the following ing description of this insect and its "The Earwig is one of our most insects; it is well known to every is very generally an object of unco dislike; the forceps at its tail, threatening manner in which t turned over its back, to pinch any which it is afraid, render it peculi gusting. The fore wings of the E

part, leathery pieces, which cover
small portion of the body: the
incapable of bending or folding
any direction, or of using them as
flight. The hind wings are quite
from the fore wings; they are folded
small compass, and covered by
ings, except a small portion which
from beneath them; and, when
in this position, appear totally
organs of flight. When unfolded,
wings are remarkably beautiful;
ample size, perfectly transparent,
prismatic colours when moved in
and are intersected by veins,
diate from near the centre to the
The shape of these wings, when
nal, is nearly that of the human
from this circumstance it seems
probable that the original name of
was Earwing. [It derives its pre-
from its supposed habit of insinu-
if into the ears of persons who
ly lie down and sleep on the grass,
position, if not entirely ground-
reported by any well authenticated

ts subsist principally on the leaves
s of plants, and on fruit; and they
ly nocturnal insects, retiring by
dark crevices and corners, where
screened from observation. The ra-
h which they devour the petals of
, remarkable; they clasp the edge
in their fore legs, and then, stretch-
eir head as far as possible, bite out
d; then another mouthful nearer,
still the head is brought to the
This mode of eating is exactly
h is practised by the caterpillars of
and moths: the part of a leaf or
ken out in a semicircular form,
head is thrust out to the extreme
r a series of mouthfuls. Pinks,
, and dahlias, very frequently lose
beauty from the voracity of these
When the time of breeding has ar-
sh is generally in the autumn, the
ales find protection to the cracks in
of old trees, or the interstices of
ouwalls, or under heavy stones on
d: here she commences laying her
e eggs are usually from twenty to
number: when the female has
aying them, she does not forsake
, the habit of other insects, but sits
in the manner of a hen, until they
ed. When the little ones leave the
r are very perceptibly larger than
which contained them. They pre-
emble the parent in structure and
ept that they are without wings;
differ in colour, being perfectly
The care of the mother does not
h the hatching of the eggs: the
ues run after her wherever she
d she continues to sit on them and
r them with the greatest affection
days. If the young ones are dis-
scattered, or if the parent is taken
m them, she will, on the first op-
, collect them again, *and brood*
m as carefully as before, allowing
them to push her about, and cautiously moving one foot after another, for fear of hurting them. How the young ones are fed until the mother's care for them has ceased, does not appear to have been ascertained; for it is not until they are nearly half grown that they are seen feeding on vegetables with the rest."

A remarkable fact, in relation to the Earwig, is its great abundance at particular times, and its subsequent rarity. From the observations of entomologists, it has been proved that these insects migrate in considerable flocks, selecting the evening for their excursions. It is common with gardeners to hang up, among the flowers and fruit-trees subject to their attacks, and also to place on the ground, pieces of hollow reeds, lobster-claws, and the like, which offer enticing places of retreat for these insects on the approach of daylight, and by means thereof great numbers of them are obtained in the morning. Poultry are very fond of Earwigs. There are many exotic species of this genus, some of them with remarkably elongated forceps.

EBURNA. A genus of marine Mollusca found in the Indian and Chinese seas, inhabiting an oval, thick, smooth, umbilicated shell. The Eburnæ in some respects resemble the Buccina; from which, however, they are essentially different. The head of the animal is furnished with a

EBURNA SPIRATA.

proboscis, and two tentacula having eyes in the middle; foot short; spire angulated and acute; aperture oval, terminating anteriorly in a canal, posteriorly in a groove; outer lip slightly thickened with an anterior notch, which terminates a spiral fold surrounding the body whorl; umbilicus generally covered by the thickened columellar lip.

ECHIDNA, or PORCUPINE ANT-EATER. (*Echidna hystrix.*) This curious animal is a native of Australia, and is a striking instance of that beautiful gradation, so frequently observed in the animal kingdom, by which creatures of one tribe or genus approach to those of a very different one. It has the external coating and general appearance of the Porcupine, with the mouth and peculiar generic characters of the ant-eaters. It is about a foot in length: the upper parts of the body and tail are thickly coated with strong and very sharp spines, of a yellowish white with black tips, and thicker in proportion to their length than those of a porcupine. The head, legs, and under parts of the body are of a deep brown, and thickly *set with bristly hair*; the tail is very short, *and covered* with spines pointing perpen-

dicularly upwards. The snout is long and tubular, the mouth small, and the tongue long and lumbriciform, as in other Ant-eaters. The legs are very short and thick; and are each furnished with five rounded,

PORCUPINE ECHIDNA.—(ECHIDNA HYSTRIX.)

broad toes: on the fore feet are five very strong, long, and blunt claws; but on the hind feet there are only four claws, the thumb being destitute of a claw: the first claw on the hind feet is extremely long, rather curved, and sharp pointed; the next shorter, but of similar appearance; the two remaining ones far shorter, and blunt: it has great strength, and burrows with wonderful celerity.

At a meeting of the Zoological Society, July 22. 1845, Professor Owen communicated his observations on the living *Echidna* exhibited at the Menagerie of the Society in May preceding. The animal when received at the Gardens was active and apparently in sound health. It was placed in a large but shallow box, with a deep layer of sand on one half of the bottom; the top covered with close cross-bars. The animal manifested more vivacity than might have been expected from a quadruped which, in the proportions of its limbs to its body, as well as in its internal organization, makes the nearest approach, after the Ornithorhyncus, to the Reptilia. In the act of walking, which was a kind of waddling gait, the body was alternately bent from one side to the other, the belly was lifted entirely off the ground, and the legs, though not so perpendicular as in higher mammalia, were less bent outwards than in lizards. The broad and short fore paws were turned rather inwards; the hind feet had their claws bent outwards and backwards, resting on the inner border of the sole. The animal was a male; and the tarsal spur, smaller and sharper than in the Ornithorhyncus, projected backwards and outwards, almost hidden by the surrounding coarse and close hair. The small eyes gleamed clear and dark; the ball was sensibly retracted when the animal winked, which it did frequently. It commenced an active exploration of its prison soon after it was encaged: the first instinctive action was to seek its ordinary shelter in the earth, and it turned up the sand rapidly by throwing it aside with strong strokes of its powerful fossorial paws, and repeating the act in many places, until it had assured itself that the same hard impenetrable bottom everywhere opposed its progress downwards. The animal then began to explore every fissure and cranny, poking its long and slender nose into each crevice and hole, and through the interspaces of the cross-bars above. To reach these it had to raise itself almost upri[illegible] and often overbalanced itself, falling on [illegible] back, and recovering its legs by perform[illegible] a summerset. I watched these attempt[illegible] the animal to escape for more than an h[illegible] and it was not till it had got experienc[illegible] the strength of its prison, that the Echi[illegible] began to notice the food which had b[illegible] placed there. This consisted of a saucer [illegible] bread and milk and some meal-worms. [illegible] milk was sucked or rather licked in by ra[illegible] protrusion and retraction of the long [illegible] cylindrical tongue. The tongue came [illegible] than once in contact with the larvæ, wh[illegible] were sometimes rolled over by it, but [illegible] attempt was made to swallow them. [illegible] Echidna offered little resistance when se[illegible] by the hind-leg and lifted off the gro[illegible] and made not the slightest demonstratio[illegible] defending himself by striking with his h[illegible] spurs: the only action when irritated wa[illegible] roll itself into a ball like a hedgehog—[illegible] bristles being then erect.—*Ann. Nat. Hi*[illegible]

ECHIMYS: ECHIMYNA. The na[illegible] of a genus and subfamily of Rodents, c[illegible] taining the genus *Echimys* or *Loncheres* [illegible] largish spiny-haired rat-like animal wit[illegible] long tail; it is a native of South Ameri[illegible] The genus *Octodon*, an arboreal type fo[illegible] in Chili; and *Aulacodus* or Ground [illegible] from South Africa—also belong to this s[illegible] family.

ECHINEIS. A genus of fish remarka[illegible] for a series of suckers on the top of the be[illegible] [See REMORA.]

ECHINODERMATA. The name gi[illegible] to an extensive order of Invertebrate a[illegible] mals of the class RADIATA, comprising [illegible] those which have a hard coriaceous inte[illegible] ment, which in some species is covered w[illegible] sharp spines or prickles, like those of [illegible] hedgehog; a digestive and vascular syste[illegible] and a sort of radiating nerves. They are [illegible] marine animals, possessing the power of [illegible] comotion; the sexes are distinct; and [illegible] young are produced from ova. "In t[illegible] group," as Mr. Patterson observes, "we [illegible] animals of extremely dissimilar appearan[illegible] associated together. One species is attach[illegible] for a certain period, to a stem, and resemb[illegible] a polype, with its waving and sensitive ar[illegible] In the common star-fish, or 'five-finger[illegible] we have the arms radiating from a comm[illegible] centre. In the sea-urchins there are [illegible] arms, and the form of the body is globul[illegible]

ECHINUS CREMULARIS.

and, passing over some intermediate g[illegible] dations of figure, we reach creatures wh[illegible] in external aspect, resemble worms, and ha[illegible]

even been classed as such. At one extremity of the range, the Echinodermata remind us of polypes — creatures of inferior organization; at the other extremity, they approach the annulose animals, whose structure is of a higher grade. Those occupying the centre of the group may be regarded, therefore, as the types or representatives of the class." There is a very fine collection of them in the British Museum. Prof. E. Forbes has described and figured the British species in his "British Star-fishes." (See ASTERIAS; ECHINUS; ENCRINITE; HOLOTHURIA; OPHIURUS.)

ECHINOPS. A singular genus of the flower tribe, allied to the *Tourec*, and a native of Madagascar and the Mauritius: one species, *E. Tafforti*, is known.

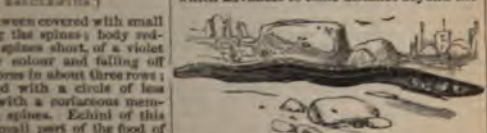
ECHINUS. The generic name of the SEA-URCHINS, or SEA-EGGS, which constitute the type of the class *Echinodermata*, or certain invertebrate animals, which have a crustaceous or coriaceous integument, most commonly armed with tubercles or spines. They are all inhabitants of the sea; and many of them have often been found in a fossil state. The spines are connected with the outer skin by very strong ligaments, and are the instruments of motion. They are generally armed with five sharp teeth; and the pores are furnished with a retractile tentacle or fistar to each, by which the animal affixes itself to any object, and stops its motion. The species most esteemed as an esculent, and thence denominated *Echinus esculentus*, is subglobular; with ten avenues of

PURPLE SEA URCHIN.
(ECHINUS ESCULENTUS.)

pores, the spaces between covered with small tubercles supporting the spines; body reddish or yellowish; spines short, of a violet colour; losing their colour and falling off the dead animal; pores in about three rows; tubercles surrounded with a circle of less ones; vent closed with a cartaceous membrane covered with spines. Echini of this sort constitute no small part of the food of the poor in many countries, and some species are esteemed excellent. In ancient times they were accounted very delicious, being usually dressed with vinegar, boiled wine, parsley, and mint; it is recorded that they composed the principal dish at the famous supper of Lentulus, when he was made Flamen Martialis, or Priest of Mars. Our cut exhibits one half of the surface denuded of its spines to show their mode of insertion. Fossil Echinidæ, in almost incredible numbers, are to be traced through all the formations, from the epoch of the transition series to the present time; many of them being found in our own chalky or flinty soils. The *Echinus vulgaris*, so perpetually found in a fossil state, is not now traced in a living state: in make it is orbicular; with ten avenues, two of them always near each other.

EDENTATA. The name given to an order of quadrupeds, which although it includes many animals differing from each other widely in habits, and also in certain points of structure, yet agree in so many essential characters, and are connected together by so many intermediate links, as to require being associated in the same group. They all agree in the absence of teeth in the front of the jaws; all resemble each other in the great claws which encompass the ends of their toes; and they are all distinguished by a certain slowness, or want of activity, obviously arising from the peculiar organization of their limbs. The armour-clad, insectivorous *Armadillos*, of South America; the tree-inhabiting *Sloths*, and hairy toothless *Ant-eaters*, of the same continent; the gigantic *Megatherium*, which formerly inhabited it; and the *Manis*, whose lizard-like body, defended by an impenetrable coat of mail, excites our wonder — all belong to the order EDENTATA; which constitute the last group of *ungiculated* animals, and are severally described in the course of this work.

EEL. (*Anguilla.*) The Eel, which in a natural arrangement of the animal world may be considered as in some degree connecting the fish and serpent tribes, is a native of almost all the waters of the ancient continent, frequenting not only rivers but stagnant waters; and occasionally salt marshes and lakes. Its general appearance is so well known, and so unlike most other fishes, as to require but a slight description: we should observe, however, that though the external form of the body resembles the snake, the important internal organs, and the character of the skeleton, are decidedly different. The Eel is distinguished by its uniform colours, but more particularly by the peculiar elongation of the lower jaw, which advances to some distance beyond the



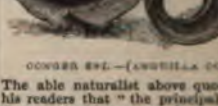
EEL.—(ANGUILLA VULGARIS.)

upper: the head is small and pointed; the eyes are small, round, and covered by a transparent skin, united with the common integument of the body; the mouth is small, and both jaws and palate are beset with several rows of small sharp teeth: the orifices of the gills are very small, of a lunated shape, and are seated close to the pectoral fins, which are small, and of an ovate shape:

the back-fin commences at some distance beyond the head, and is continued into the tail-fin, which is also united with the vent-fin. The general colour of the Eel is olive-brown on the back, and silvery on the sides and beneath; the fins are slightly tinged with violet, and sometimes margined with pale red; it is, however, sometimes seen of a very dark colour, with scarce any silvery tinge, and sometimes yellowish or greenish: those being the most beautiful which inhabit the clearest waters. The skin of the Eel is proverbially slippery, being furnished with a large proportion of mucus: it is also furnished with small deeply-imbedded scales, which are not easily visible in the living animal, but are very conspicuous in the dried skin. Fresh-water eels, inhabiting running streams with gravelly bottoms, are said to be uniformly white upon the belly, and infinitely more delicate than those of muddy waters, which possess a peculiar smell and flavour, by no means agreeable. In the choice of its food the Eel is far from being cleanly, feeding indiscriminately upon all kinds of small fish, and decayed animal matter: they are, however, a most valuable description of fish: their flesh is excellent as food, being highly nutritious, though sometimes too oily for weak stomachs. They are very prolific, hardy, and very easily preserved: they inhabit almost all our rivers, lakes, and ponds; and as they are in great esteem for the table, the consumption in our large cities is very considerable. Few animals are more tenacious of life; they continue to move for a long time even when deprived of the head and skin, preserving the muscular irritability for many hours after death.

The Eel is viviparous, producing its numerous young during the decline of summer: these at their first exclusion are very small. Very gross errors on this subject were formerly indulged in; but it appears that both eggs and ready-formed young are occasionally observed in the same individuals, as is known to be the case also with several other animals. As Mr. Yarrell observes, "during the cold months of the year Eels remain imbedded in mud; and large quantities are frequently taken by eel-spears in the soft soils and harbours and banks of rivers, from which the tide recedes, and leaves the surface exposed for several hours every day. The Eels bury themselves twelve or sixteen inches deep, near the edge of the navigable channel, and generally near some of the many land-drains, the water of which continues to run in its course over the mud into the channel during the whole time the tide is out. In Somersetshire the people know how to find the holes in the banks of rivers in which Eels are laid up, by the hoar-frost not lying over them as it does elsewhere, and dig them out in heaps. The practice of searching for Eels in mud in cold weather is not confined to this country." Some marvellous accounts are on record of the migration of Eels from one river to *another, over* intervening portions of dry *land. On this* subject the same author thus *expresses himself*: "There is no doubt that Eels occasionally quit the water, and when grass meadows are wet from dew, or other causes, travel during the night over the moist surface in search of frogs or other animals food, or to change their situation. Some ponds continually produce Eels, though the owners of these ponds are most desirous of keeping the water free from Eels, from a knowledge of their destructive habits towards the spawn and fry of other fishes. Other ponds into which Eels have been constantly introduced are obnoxious to them from some quality in the water; and they are known to leave such places during the night, and have been found on their passage to other retreats." The general size of the Eel is from two to three feet, but it is said that it sometimes, though very rarely, attains to the length of six feet, and to the weight of twenty pounds. It is a fish of slow growth, and is supposed to live to a very considerable age; and is attacked by a great many species of intestinal worms.

The CONGER EEL (*Anguilla conger*), in its general appearance is so nearly allied to the common Eel, that on a cursory view it might at first be considered as the same species: it, however, differs materially from it in size, being sometimes ten feet in length, as thick as a man's thigh, and weighing 100 lbs.; it is also in general of a darker colour on the upper part, and of a brighter hue beneath: there is also on the sides a straight, white, broadish line, seemingly composed of a double row of points, which reaches from the head to the tail. The Conger resides generally in the sea, and is only an occasional visitant of fresh waters. In the winter it is supposed to imbed itself under the soft mud, and to lie in an inactive state; but on the approach of spring it emerges from its concealment, and visits the mouths of rivers.



CONGER EEL.—(ANGUILLA CONGER.)

The able naturalist above quoted informs his readers that "the principal fishery for Congers in this country is on the Cornish coast; where, according to Mr. Couch, it is not uncommon for a boat with three men to bring on shore from five hundred weight to two tons, the fishing being performed during the night; for this fish will not readily take a bait by day, and even on moonlight nights it is more shy than when in the dark, except in deep water. The most usual bait with the Cornish fishermen is a pilchard. The Congers that keep among rocks hide themselves in crevices, where they are not unfrequently left by the retiring tide; but in situations free from rocks, Congers hide themselves by burrowing in the ground. The flesh is not in much estimation, but meets a ready sale at a low price among the lower classes. The skin, in a most re-

sparing even those of its own
om the stomach of a specimen
wenty-five pounds, I took three
ks, and a young Conger of three
gth. The power of the jaws in
very great: in the stomach of
mens examined on the coast, I
the young testaceous coverings
-fish comminuted to fragments.
often tempted by the crustacea
n the lobster-pots to enter those
order to feed on them, and are
ntly captured."

ee NEWT.]

ED. The name given to some
eb-footed birds belonging to the
ily. [See TERN.]

[MOTH]. A name given by col-
e species of Moths, of the genera
and *Eriogaster*.

[See HERON.]

DUCK. (*Somateria mollissima.*)
le species of wild duck is of a
n the tame duck and the goose,
about two feet in length. The
s; the middle of the neck small,
ower part of it spread out very
s to form a hollow between the
The bill is of a dirty green or

EIDER DUCK.
(SOMATERIA MOLLISSIMA.)

r, and the upper mandible forked
ar manner towards each eye, and
th white feathers on the sides as
l as the nostrils. The upper part
l is of a soft velvet black, divided
a dull white stroke: the feathers,
ape of the neck to the throat, are
and look as if they had been
at the lower ends. The cheeks,
part of the neck, the back, and
-coverts, are white; the scapu-
white; bastard wings, and pri-
brown; secondaries, and greater
ker brown; the front part of the
breast, is of a buff colour; the
y, rump, and tail-coverts are of a
black; tail feathers hoary brown;
and yellow; webs and nails
e full-grown male weighs from
pounds; the female only be-
nd six. Her shape is nearly the
her plumage is quite different,
colour being of a reddish brown,
t warpt black lines: the wings

are crossed with two bars of white; quills dark; the upper part of the neck marked with dusky streaks; and the belly is deep brown, spotted obscurely with black.

This highly useful and valuable species is a native of the frozen regions of the north: it is extremely abundant in Iceland, Lapland, Greenland, and Spitzbergen, on the shores of Baffin's and Hudson's Bays, &c.; it is also very numerous in the Hebrides and the Orcades, but becomes rare as we advance to the south. The female lays five or six pale greenish-olive eggs in a nest composed of marine plants, and thickly lined with a beautiful down of most exquisite fineness, which is highly esteemed for its excessive lightness, elasticity, and useful qualities. The nest is usually formed on small islands, not far from the shore. As long as the female is sitting, the male continues on watch at no great distance; but as soon as the young are hatched he leaves them: the mother, however, remains with them a considerable time afterwards, and is said to assist them out of the nest almost as soon as they creep from the eggs, and proceeding to the shore, they crawl after her: when she arrives at the water's edge she takes them on her back, and swims a few yards with them; she then dives, and the young being left floating on the surface, they are obliged to take care of themselves.

The manner in which the eider down is taken is as follows:—When the collectors come to the nest, they carefully remove the female, and take away the superfluous down and eggs; after which they replace her. She then begins to lay afresh, and again has recourse to the down on her body to cover her eggs; and in the event of her own stock being exhausted, which is not unfrequently the case, she is now assisted by the male in furnishing the requisite quantity: even this is frequently taken away, when the birds proceed to furnish another supply, both of eggs and down; but if the cruel robbery be repeated again, they immediately abandon the place. One female generally yields about half a pound of down, which is worth about two dollars. This down, from its superior warmth, lightness, and elasticity, is preferred by the luxurious to every other article for beds and coverlets; and from the great demand for it, those districts in Norway and Iceland, where these birds abound, are regarded as the most valuable property, and are guarded with the greatest vigilance. As found in commerce, this down is in balls of the size of a man's fist, and weighing from three to four pounds. It is so fine and elastic, that when a ball is opened, and the down cautiously held near the fire to expand, it will completely fill a quilt five feet square: but it is worthy of observation that although the eider down taken from the nests is so excellent, the down of dead birds is little esteemed, from having lost its elasticity.

Eider Ducks associate in flocks, generally in deep water, diving to great depth for shellfish, which constitute their principal food. *They frequently retire* to the rocky shores *to rest, particularly* on the appearance of *an approaching* storm. The Greenlanders

kill them with darts, pursuing them in their little boats, watching their course by the air bubbles when they dive, and always striking at them when they rise to the surface wearied. Their flesh is eaten by the Greenlanders, but it tastes strongly of fish; the eggs, however, are much esteemed. The female lays from six to eight eggs, in a rock-built nest, lined with her own exquisite down; but the eggs and the down are both frequently obtained at the hazard of life by people let down by ropes from craggy steeps. The skin, taken off, feathers and all, are used by the inhabitants, for their under garments. It appears that all the attempts which have been made to domesticate these birds have been unsuccessful.

Another species, called the KING EIDER, (*Somateria spectabilis* of systematic writers), not much unlike the preceding, inhabits the same coasts. Its beak, wattles, and legs are of deep vermillion; a straight band of velvety black surrounds the base of the upper mandible of the beak; and there is a similar double band which becomes spear-shaped on the throat: the top and back of the head are of a fine bluish-grey; the cheeks are a brilliant sea-green; the neck, wing-coverts, and upper part of the back are pure white: the scapulars, lower part of the back, wings, tail, and all the under parts of the body are deep black. The entire plumage of the female is brown.

ELECTRICAL EEL. [See GYMNOTUS.]

ELK, or MOOSE DEER. (*Cervus alces.*) Of all the animals belonging to the genus *Cervus*, none are so large as the Elk, which in size is scarcely inferior to a horse, and its immense horns sometimes weigh near fifty pounds. It is common to both continents, inhabiting only the coldest regions, and is observed to attain larger dimensions in Asia and America than in Europe. It cannot boast of the elegant shape so general in the

ELK. (CERVUS ALCES.)

rest of the deer tribe; the head being disproportionately large, the neck short and thick, and the horns dilating almost immediately from the base into a broad palmated form; while its long legs, high shoulders, and heavy upper lip, hanging very much over the lower, give it an imposing, although an uncouth rather than a majestic ance. The colour of the Elk is grayish brown, but much paler on and beneath the tail. The hair, whi a strong, coarse, and elastic nature, longer on the top of the shoulders the ridge of the neck than on othe forming a kind of stiffish mane; throat is an excrescence, from which a tuft of long hair: the body, which and thick, is mounted on tall legs, very ungainly aspect to the animal, is not diminished when it is in its gait is a sort of shambling trot.

In Europe the Elk is found ch Sweden, Norway, and some parts of In Asia it occurs in the woody tracts Russian dominions, and in Siberia ticular it is found of a gigantic America it has been found as far the country has been explored; its range, at former periods, extended shores of the great lakes, and thro the New England states. At presen ever, they are seldom heard of to th of the state of Maine: but in Nova around the Bay of Fundy, and in th son's Bay Company's possessions, found in considerable numbers. The a mild and harmless animal, choos residence in the midst of forests, an cipally supporting itself by browsi boughs of trees: they feed principa night; and whenever they graze (wh account of their short neck and lo they do with difficulty), they are a to choose an ascending ground, for the convenience of reaching the surface their lips.

Though naturally of a peaceable offensive disposition, the Elk displays degree of courage, and even ferocity suddenly attacked; defending himse great vigour, not only with his hor also by striking violently with his fo in the use of which he is particularl trous. The chase of the Elk or Moos an important occupation among the of North America, and is performed ferent ways, some of which are as r able for artfulness as others are for h and dexterity: they are also often with the gun. Their flesh is more e by the Indians, and persons resident fur countries, than that of any other a It bears a greater resemblance, in its to beef than to venison. It is said t external fat is soft, like that of a b mutton, and when put into a blad fine as marrow. In this it differs f other species of deer, of which the e fat is hard. Their skins, when p dressed, make a soft, thick, pliable which the Indians prepare by scrapin to an equal thickness, and remov hair: they are then smeared with the of the animal, until they feel soft and and, lastly, they are suspended over made of rotten wood, until they a impregnated with the smoke.

"The Moose," says Mr. Gosse, the of the Canadian Naturalist, "is more difficult to take than any other ani

is more vigilant, and his senses more acute, than those of the buffalo or caribou, while he is more prudent and crafty than the deer. * * * I know not whether the Moose has ever been tamed; but I think it not improbable that it would be trained to harness, as well as its congeners, the reindeer and the wapiti: and it would, from its size and strength, be more serviceable than either of them. But in a new country, like this, where alone the opportunity for such an experiment is to be found, the inhabitants generally have little time, and less inclination, for innovations."

Many extraordinary accounts have been circulated by travellers, who wrote in the 17th century, of Elks or Moose Deer being seen in North America, whose height was twelve feet, and the weight of whose horns was between three and four hundred pounds. Such stories were probably derived from vague and uncertain descriptions furnished by the Indian tribes. That some animal, however, of the deer kind, far superior in size to any at present known, once existed, is sufficiently proved by the enormous fossil horns which have often been found at a considerable depth in the bogs of Ireland and the Isle of Man, as well as in America and other parts of the world. Their appearance, however, differs so considerably from the horns of the Elk, that it seems now pretty generally agreed among naturalists, that they must have belonged to some species either quite extinct or hitherto undiscovered. They are much longer and narrower in proportion than those of the Elk, and are furnished with brow antlers; and the processes or divisions into which the sides and extremities run are much longer, sharper, and more distant in proportion. Specimens of these horns occur in most of our museums, and are justly considered as some of the most interesting examples of fossil zoology.

ELAND. The name of a very large and fine species of Antelope found at the Cape of Good Hope. It is the *Boschephus Oreas* of naturalists: it is also called the *Impophoo*.

ELATER: ELATERIDÆ. A genus and family of Coleopterous insects, having setaceous antennæ; but whose leading character is a strong spine situated beneath the thorax, which fits at pleasure into a small cavity on the upper part of the abdomen; thus enabling the insect, when laid on its back, to spring up with great force and agility, in order to regain its natural position. There are various species of these Beetles; but few of the European species are comparable in point of size to such as are natives of the tropics.

[illegible] OF AN ELATER.

The largest, and one of the most remarkable, is the ELATER FLABELLICORNIS, which is two inches and a half long, and of a uniform brown colour; it differs from the rest in having very strongly pectinated antennæ, the divisions of which, forming a kind of fan on the upper part of each, are nearly a quarter of an inch in length. It is met with in many parts of Asia and Africa.

A species, still more remarkable than the preceding, is the *Pyrophorus noctilucus*, called in South America *Cocujas*. It is about an inch and a half long, of a brown colour, and has a smooth, yellow, semi-transparent spot on each side of the thorax; these spots being, like those on the abdomen of the glowworm,

FIRE-FLY ELATER.
(PYROPHORUS NOCTILUCUS.)

highly luminous in the dark: in short, it is one of the most brilliant of the Fire-flies which inhabit South America and the West India islands. It is asserted that a person may with great ease read the smallest print by the light of one of these insects held between the fingers, and gradually moved along the lines, with the luminous spots above the letters; but if eight or ten of them be put into a phial, the light will be sufficiently great to admit of writing by it. Oviedo says, that the Indians travel in the night with these insects fixed to their hands and feet; and that they spin, weave, paint, dance, &c., by their light. In "Prescott's Conquest of Mexico," vol. ii. p. 261., we are told that in 1520, when the Spaniards visited that country, "the air was filled with the "cocuyos," a species of large beetle which emits an intense phosphoric light from its body, strong enough to enable one to read by it. These wandering fires, seen in the darkness of the night, were converted, by the excited imaginations of the besieged, into an army with matchlocks!" Such is the report of an eye-witness. (*Bernal Diaz. Hist. de la Conquista*, cap. 122.) Several others might be mentioned of inferior size, one of which it may be necessary to describe; this is the *Elater oculatus*, which is of a dark brown colour, and somewhat smaller than the preceding; distinguished by the thorax being marked on each side by a large, oval, jet black spot, surrounded by a white margin. It is common in North America.

Such species of the Elater as are natives of this country are much smaller than the exotic ones above mentioned, and but rarely distinguished by any peculiar brilliancy.

The larvæ or grubs of the Elaters live upon wood and roots, and are often very injurious to vegetation. Some are confined to old or decaying trees, others devour the roots of herbaceous plants, and are called *wire-worms*, from their slenderness and uncommon hardness. The English wire-worm is said to live, in its feeding or larva state, not less than five years; during the greater

part of which time it is supported by devouring the roots of wheat, rye, oats, and grass, annually causing a large diminution of the produce, and sometimes destroying whole crops. It is said to be particularly injurious in gardens recently converted from pasture lands; and the method adopted for alluring and capturing these grubs consists in strewing sliced potatoes or turnips in rows through the garden or field; women and boys are employed to examine the slices every morning, and collect the insects which readily come to feed upon the bait. Some of these destructive insects are long, slender, worm-like grubs, closely resembling the common meal-worm; nearly cylindrical, with a hard and smooth skin, of a buff or brownish yellow colour, the head and tail only being a little darker; each of the first three rings provided with a pair of short legs, and a short retractile wart or prop-leg, serving to support the extremity of the body, and prevent it from trailing on the ground. Other grubs of Elaters differ from the foregoing in being proportionally broader, not cylindrical, but somewhat flattened. Such are mostly wood-eaters.

After their last transformation, Elaters or Spring-beetles make their appearance upon trees and fences, and some are found on flowers. They creep slowly, and generally fall to the ground on being touched. They fly both by day and night. Their food, in the beetle state, appears to be chiefly derived from flowers; but some devour the tender leaves of plants.

ELEPHANT. (*Elephas.*) Largest of all living animals, and prodigiously strong, the Elephant is not less remarkable for docility and sagacity. Of this we have concurrent testimony from the earliest ages to the present time; yet, were we to form our ideas of its capacities only from the external appearance of this formidable animal, a sagacious character is the last we should be likely to give it credit for. The whole form is awkward; the head is large, the eyes extremely small, and the ears very large and pendulous; the body is huge and thick, and the back much arched; the legs are very clumsy and shapeless, and the feet slightly

ASIATIC ELEPHANT.—(ELEPHAS INDICANUS.)

divided into five rounded hoofs; but under *this uncouth exterior* are qualities which *entitle its possessor* to the admiration of *mankind*—a *mild* and gentle disposition, superior intelligence, great attachment to its master, and invincible perseverance. In point of bulk, the Rhinoceros and the Hippopotamus are the only existing terrestrial animals that can approach the Elephant; though some other species of *Pachydermata* now extinct must have considerably surpassed him. The enormous weight of the body could only be sustained by legs of the most solid construction; and accordingly we find that these have the aspect of straight columns, the joints being so formed that each bone rests vertically upon the one beneath it.

Elephants, of which only two species at present exist, viz. the Asiatic and the African, are distinguished by their extraordinary proboscis or trunk, by the possession of two enormous tusks, which project downwards from the upper jaw, and by the absence of front teeth in the lower. The African and Asiatic species differ from each other in the size of the tusks, which are much larger in the former than in the latter. In the young animals the tusks are not visible; in the more advanced state of growth they are extremely conspicuous; and in a state of maturity they project in some instances six or seven feet; nay, several tusks measured by Eden were nine feet in length; and Harkenfels measured one which exceeded fourteen feet! The largest tusk on record was sold at Amsterdam, and weighed 350 lbs. It is but rarely that the tusks are seen in the females; and when they appear, they are but small, and their direction is rather downwards than upwards. The African Elephant is said to be smaller than the Asiatic; yet the ivory dealers in London affirm that the largest tusks come from Africa, and are of a better texture, and less liable to turn yellow than the Indian ones. The increase of the tusks arises from circular layers of ivory, applied internally, from the core on which they are formed; similar to what happens in the horns of some animals.

But it is the trunk of the Elephant which may justly be considered as one of the miracles of Nature; being, at once, the organ of respiration, as well as the instrument by which the animal supplies itself with food, and sucks up the water it requires to allay its thirst. This wonderful organ is cartilaginous, and composed of numerous rings, divided through its whole length by a septum, and forming a sort of double tube, terminating in a kind of finger-like appendage or movable hook. "Endowed with exquisite sensibility, nearly eight feet in length, and stout in proportion to the massive size of the whole animal, this organ," as is well expressed by Mr. Broderip, "at the volition of the Elephant, will uproot trees or gather grass—raise a piece of artillery or pick up a comfit—kill a man or brush off a fly. It conveys the food to the mouth, and pumps up the enormous draughts of water, which by its recurvature are turned into and driven down the capacious throat, or showered over the body. Its length supplies the place of a long neck, which would have been incompatible with the support of the large head and weighty tusks. A glance

trunk of an elephant will show the ...e and strength of the trunk at its ...; and the massy arched bones of ...r and thick muscular neck are ad... ...rful and wonderful instrument."

...hants are naturally gregarious; large ...numbling together, and living in a ...of society. The skin of the Elephant ...a deep sub-coloured brown; but in ...parts of India it is said to be found, ...ch rarely, of a white or cream colour. ...ctilinear arrives at the height of twelve ...teen feet, though the more general ...ht seems to be about nine or ten feet. ...se animals are commonly found in the ...t of shady woods, being equally averse ...intense heat as to cold; they delight in ...l spots, near rivers, and, as they swim ...h great ease, they frequently bathe in the ...day. Their general food consists of the ...der branches of various trees, as well as ...grains and fruits; on which account it is ...at their incursions are so much dreaded in ...untries of various kinds, where they are ...ed occasionally to commit the most violent ...ravages; at the same time injuring the ...ops by trampling the ground with their ...huge feet.

The wild Elephants of Ceylon, which are much esteemed, live in small groups or families. In wandering from place to place, the males, who are furnished with the largest ...ks, put themselves at the head, and are the first to face every danger. In swimming

(ASIATIC ELEPHANT.—KENTRAH INDICUS.)

over any large river, they lead the van, and seek a proper landing-place; next follow the young Elephants, clinging to each other by means of their trunks, whilst the remainder of the full-grown bring up the rear. In all ages these animals have been eagerly hunted; and some of the arts which have been employed to kill or take them merit attention. The Hottentots in South Africa shoot them with the balls; this chase is executed with considerable danger, and with every precaution that can be used, the sagacity of the Elephant often detects the approach of the hunter, who, in this case, will, in all probability, fall a victim to the rage of the animal, unless he can instantly dissimulate. In the island of Sumatra, the inhabitants split sugar-canes (of which food the Elephant is very fond), and impregnate them with poison. In Abyssinia they are pursued by hunters on horseback, in the following manner:—Two men, perfectly naked, mount the same horse; the hinder-most is armed with a broadsword, the lower part of which is covered with cord, and the remainder is exceedingly sharp. In this manner they pursue the Elephants, and, having singled out one, they irritate him to attack them, when they ride up close to him, and the armed man slips from the horse on the off side, and, whilst the Elephant's attention is engaged with the horse, he divides the tendons of his foot with a single blow, and thus disables him, when he is dispatched by lances.

They are also taken alive in pitfalls, or are driven into enclosures; in either case they are fed scantily, though regularly, for a few days, when tame Elephants are employed to engage their attention till they can be tied fast to a tree; after they have become somewhat dispirited, they are led away between two tame ones, and put under the care of keepers, who gradually bring them into subjection,—more, however, by caresses and soothing, than by coercion. When tamed, they become the most gentle and obedient of all domestic animals, and, in most cases, are exceedingly fond of their keepers, and soon learn to distinguish the various tones of the human voice, as expressive of anger, approbation, or command. The domesticated Elephant performs more work than six horses, but at the same time requires much care, and a plentiful supply of food. He is generally fed with rice, either raw or boiled, and mixed with water. To keep him in full vigour, a hundred pounds of this food is said to be required daily, besides fresh herbage to cool him; and he must be led to the water twice or thrice a day to bathe. His daily consumption of water as drink is about forty gallons.

It would be difficult to enumerate *all* the services of these useful animals, so varied are they, and so valuable where strength is necessary. They are employed in carrying burdens on their bodies, necks, and even in their mouths, by means of a rope, the end of which they hold fast with their teeth; they load a boat with amazing dexterity, carefully keeping all the articles dry, and disposing them where they ought to be placed. In propelling wheel carriages heavily laden upon a declivity, they push them forward with their forehead, and support them with their knees. In dragging beams of wood along the ground, they remove obstacles or elevate the ends of the beams so as to clear them. Before the invention of fire-arms, they were used in war by many nations of antiquity; and they are still employed in the East in dragging artillery over mountains. In many parts of India, Elephants are made the executioners of justice; for they will with their trunks either break the limbs of a criminal, trample him to death, or pierce him with their tusks, as they may be directed. The Elephant has been long made the companion of the sports of the Orientalist in the great hunting parties; and from the same early period has been made to minister to the wanton and cruel pleasures of Eastern princes, by being stimu-

lated to combat not only with other Elephants, but with various wild animals: in short, were it consistent with the limits of this work, we might fill many pages with matter, both historical and anecdotical, relating to the uses of this noble animal. We may, however, observe that, its strength being equal to its bulk, it is able to carry on its back three or four thousand weight; on its tusks alone it can support near one thousand; and its ordinary pace is equal to that of the horse at an easy trot.

In the preceding part of this article we have dwelt particularly on the Elephant's trunk and tusks, as deserving especial notice: the organ of hearing would scarcely appear to deserve less. The structure of the Elephant's ear has been investigated with great accuracy by Sir Everard Home. The drum, and every other part of the organ, is much larger in proportion than in other quadrupeds, or in man; and there is a remarkable difference in the arrangement of the muscular fibres of the drum of its ear, when compared with some quadrupeds and the human species. In the human ear, those fibres are radia of a circle; and in the horse, the hare, and the cat, they are of an uniform length; but in the Elephant's ear these fibres are so placed that some are more than double the length of others. Sir E. Home argues, from this remarkable construction, that the Elephant has not a musical ear; but that it has a peculiar compensating power in this length of fibre, as its slower vibrations enable it to hear sounds at a great distance.

The tusks of the Elephant have long been applied, under the denomination of *ivory*, to a variety of important uses in the arts. From the fossil remains which have been discovered, it is apparent that they must have been abundantly distributed over the earth; and some of them appear to have been adapted to a much more northern climate than is now inhabited by the Elephant. It is, indeed, a most curious fact, that skeletons nearly allied to, if not quite resembling, those of Elephants are occasionally found in a fossil state, and in large quantities, at a great depth under the surface, in Russia and Siberia. "All the arctic circle," says Pennant, "is a vast mossy flat, formed of a bed of mud or sand, apparently the effect of the sea, and which gives reason to think that that immense tract was in some distant age won from it. With them are mixed an infinitely greater number of marine bodies than are found in the higher parts of that portion of Asia. I give the fact: let others, more favoured, explain the cause how these animals were transported from their torrid seats to the Arctic regions: I should have recourse to the only one we have authority for; and think that phenomenon sufficient. I mention this, because modern philosophers look out for a later cause: I rest convinced, therefore, to avoid contradicting what can never be proved." Dr. Falconer and Major Cautley have brought from the Sewalik Hills in India numerous fossil remains of Elephants, some of them of enormous size. They are all in the truly magnificent collection of the British Museum, and are des[illegible] by the donors in their well-known wor[illegible] Fauna Antiqua Sivalensis; the illustr[illegible] of which by Mr. Ford will hereafter be [illegible] like the work of Lyonet (alluded to [illegible] Cossus), as a perfect example of exce[illegible] in the drawing of Fossils.

ELMIS: ELMIDÆ. A genus and family of aquatic Coleoptera, small i[illegible] and of an ovate form, found adheri[illegible] the under sides of stones lying at the b[illegible] of running water. They are unable to [illegible] but are provided with very powerful [illegible] and ungues, by which they are enab[illegible] retain firm hold on the stones in the boisterous currents. Twelve or th[illegible] species belonging to three genera have [illegible] found in this country.

ELOPS. (*Elops saurus.*) A small [illegible] known in the West Indies by the na[illegible] the Sein-fish, or Sea Gally-Wasp. [illegible] about fifteen inches long; in the middl[illegible] inches round, and tapering to both end[illegible] head is smooth, and without scales; th[illegible] much forked, and armed both above [illegible] below by a strong spine, forming a [illegible] spiny ray on each side the tail. Its [illegible] ral colour is a silvery gray: dusky o[illegible] back, the head slightly tinged with y[illegible] the fins of a bluish brown, and the [illegible] white.

EMARGINULA. A genus of small [illegible] lusca, inhabiting the seas of all cli[illegible] and having two short tentacula, with [illegible] at the base; foot large and thick. The [illegible] is patelliform, oblong, or oval; an[illegible] margin notched. The Emarginulæ m[illegible] known from Patellæ and other approx[illegible] ing genera, by the notch or slit in the [illegible] rior edge. Recent species, though w[illegible] diffused, yet not numerous; fossil sp[illegible] rare.

EMBERIZA. The name of a ge[illegible] Passerine birds. [See BUNTING.]

EMBLEMA PICTA, or PAIN[illegible] FINCH. This Passerine bird is a nat[illegible] the north-west coast of Australia. It [illegible] scribed and figured by Mr. Gould; and [illegible] bits a singularity in colouring which is [illegible] ever witnessed among the feathered [illegible] the upper parts of the plumage being re[illegible] ably plain, while the under surface [illegible] tremely beautiful. The face and thro[illegible] deep vermillion-red; crown of the he[illegible] the upper surface, and wings, brown [illegible] base of all the feathers of the throat [illegible] giving to that part a mingled appearan[illegible] black and red; rump deep vermillion [illegible] tail dark brown; chest and all the [illegible] surface jet-black; the flanks thickly s[illegible] with white; and the centre of the abd[illegible] deep vermillion-red; upper mandible [illegible] under mandible scarlet; feet light red.

EMERALD [MOTHS.] A name [illegible] by collectors to Moths of the genus *H*[illegible] *chus*.

EMPEROR [MOTH]. The name [illegible] species of Saturnia; a genus of noct[illegible] Lepidoptera. [See SATURNIA.]

U, or EMEU. (*Dromaeus Novæ Hol-*
.) This singular bird is a native of
alia, and allied to the Cassowary;
y equalling the Ostrich in bulk; but
ter legs, a shorter neck, and is thicker
e body. Dr. Latham says, This bird
ers more than seven feet in length;
nk is black; the plumage for the most
brown and gray mixed, paler on the
parts: the head differs greatly from
f the common Cassowary, being covered
feathers; nor has it any helmet or
protuberance whatever, as in that

.—(DROMAIUS NOVÆ HOLLANDIÆ.)

; the feathers, however, about the head
ck are of a hairy texture, and the
rt of the chin and throat nearly des-
f any, so that the purple colour of
n may be seen through them: the
thers observable in the wings of the
ary of the Old Continent are here
g; but instead of them are real wings,
of so small a size as to be useless for
they are covered with feathers like
of the body, and when the bird is
rest, are scarcely discernible there-
The legs are stout, similar to those
Galeated Cassowary, but greatly in-
or jagged at the back part: the three
ed in the same manner, all for-
So far the external appearance of
d: internally it is said to differ from
ther species, particularly in having
ard, and the liver being so small as
xceed that of a blackbird. It is shy
nid, trusting to its great speed for
except when hard pressed; it then
violently with its legs. The flesh of
ng is delicate, but that of the full-
bird is coarse; it is pursued, however,
oil that is obtained from it, of which
s produces six or seven quarts.
stated by Capt. Grey (*Travels in*
lia), that "Emus are killed in pre-
he same manner as Kangaroos, but as
e more prized by the natives, a greater
of excitement prevails when an Emu
; shout succeeds shout, and the distant
take up the cry until it is sometimes
ed for miles: yet the feast which
the death is a very exclusive one;
h is by far too delicious to be made a
n article of food,—hence, heavy pe-
are pronounced against young men,
unfeathered persons, who venture to
touch it; and these are invariably rigidly enforced."

At a meeting of the Zoological Society of London (Feb. 23. 1847), the Earl of Derby observed that it was generally supposed that these birds, like most of the *Rasores*, are polygamous: this, however, was not the fact: the Emu is strictly monogamous; and the male, who attends to the eggs, by no means approves of any other female than the favoured one coming near the nest.

EMU-WREN. The name given in Australia to a singular small species of Malurus, the *Stipiturus malachurus*; so called from the tail feathers being loose webbed and bearing some resemblance to the double feathers of the Emu.

EMYDÆ. A family of Testudinous animals, known as MARSH TORTOISES. They inhabit warm climates both of the Old and New World, and are found also in Australia, where hitherto no land Tortoise has been detected. Their shell is more convex than that of the latter; their feet are webbed, and their toes are armed with sharp claws. Though they seldom venture far from the water, which is their natural element, and which they invariably seek as a refuge from

MARSH TORTOISE.—(EMYS PICTA.)

danger, they are far more active and alert on land than those species which are well-known to us as Land Tortoises. They are carnivorous in their habits; eagerly pursuing frogs, fishes, newts, and insects; and some of them are really formidable from their size and ferocity. [See TORTOISE.]

We refer our readers to the great work of Professor Bell, and to Mr. Gray's very admirable Catalogue of the Tortoises in the British Museum, where all the species are described.

ENALIOSAURI. The name applied to that order of Reptiles which contains the fossil genera ICHTHYOSAURUS and PLESIOSAURUS [which see].

ENCHELIDES. A genus of animalcules, the forms of which are extremely various. In some, scarcely any definite shape can be discovered; their bodies appearing to be composed of a mass of gelatinous matter without any solid support.

ENCRINITES. A genus of petrified radiated animals commonly called *Stone Lilies*. Speaking of their rare occurrence in our modern seas, and of their vast numerical importance among the earliest inhabitants of the ancient deep, Dr. Buckland observes:—"We may judge of the degree to which the individuals of these species multiplied among the first inhabitants of the sea, from the

countless myriads of their petrified remains which fill so many limestone-beds of the transition formations, and compose vast strata of entrochal marble, extending over large tracts of country in Northern Europe and North America. The substance of this marble is often almost as entirely made up of the petrified bones of Encrinites as a cornrick is composed of straws. Man applies it to construct his palace and adorn his sepulchre; but there are few who know, and fewer still who duly appreciate, the surprising fact, that much of this marble is composed of the skeletons of millions of organized beings, once endowed with life, and susceptible of enjoyment, which, after performing the part that was for a while assigned to them in living nature, have contributed their remains

LILY ENCRINITE.—(ENCRINUS LILIIFORMIS.)

towards the composition of the mountain masses of the earth. Of more than thirty species of Crinoideans that prevailed to such enormous extent in the transition period, nearly all became extinct before the deposition of the lias, and only one presents the angular column of the Pentacrinite: with this one exception, pentangular columns first began to abound among the Crinoideans at the commencement of the lias, and have from thence extended onwards into our present seas. Their several species and even genera are also limited in their extent: *e. g.* the great Lily Encrinite (*E. moniliformis*) is peculiar to the muschel-kalk, and the Pear Encrinite to the middle region of the oolitic formation.

ENHYDRA. The generic name of the Sea Otter of California (*Mustela lutris*, Lin.) See OTTER.]

ENTOMOPHAGA. The name given to a group of Hymenopterous insects, whose larvæ generally feed, parasitically, upon living insects.

ENTOMOSTRACA. A division of the class *Crustacea*, comprising those animals which have only a slight integument in the form of a shell to protect them; of which the genus *Cypris* (many species of which occur in this country) may be given as an example. Their exceeding minuteness and extreme delicacy of structure have deterred most naturalists from examining them and studying them as they require to be studied —fresh from their native habitats. The *difficulty* of preserving them obliges the *naturalist* to seek them in their secret lurking *places* — the fresh-water ponds and ditches, and the little pools in the rocks on t shore, where they are chiefly to be and to study them as it were on th with the aid of his microscope. Baird, who has some ingenious rema Entomostraca in "The Zoologist" alluding to what Latreille had said resp their organs of mastication being too for human observation), says, "The of mastication are not however the o gans that are worthy of being noticed. beautiful and delicate structure of th and branchial appendages are worthy admiration. These latter organs are constantly in motion, and present interesting appearance when viewed the microscope. The extraordinary they have of reproducing their young the transformations which some of the dergo in an early stage, are subjects might occupy a considerable time scribing, and which cannot be atten without exciting the greatest interest mind of the observer." Dr. Baird h nographed all the British species, and lished also descriptions of several species. [See CYPRIS.]

ENTOMYZA. A genus of birds b ing to the *Meliphagidæ*, of which w mention one of the best known species

ENTOMYZA CYANOTIS, called colonists of New South Wales Blue This bird is found almost exclusively Eucalypti, searching among the bl and smaller leafy branches for th which consists partly of insects and of honey, and, as others of the gen probably, on berries and fruit. Th bold and spirited birds, pugnaciously d and drawing about the other species to the same tree. Its cry is loud and tonous. In every instance that Mr. found its eggs, they were deposited deserted, dome-shaped, large nest of t *matorhinus*, never within the dome, b neat round depression on the top. It mences breeding early, and has at le broods in a year.

ENTOZOA. A name given to an sive series of low-organized inver animals (generally vermiform), the part of which are inhabitants, during whole period of existence, of other an whose internal organs they prey upon. have colourless blood, no respiratory and no articulated members for locom Many of them infest the human body. INTESTINALIA.]

ENTOZOON. A name given to a parasite, found by Simon in the seb follicles of the skin: Mr. Erasmus has given an elaborate description of figures, in the Philosophical Transa Mr. Owen has applied the name *En* to it, the word Entozoon being pre-occ It is believed to belong to the *Rotifer* there is still some doubt of its position

EPHEMERA: EPHEMERIDÆ. A and family of Neuropterous insects, whi their name from the short duration of

…et state. They are characterised by the unequal size of the wings; the … ; the membranous … mouth; and the elongated setæ at the extremity of the tail. The body is long, soft, and slender; the eyes, nearly oval, and three … triangularly between them. The best known species is the *Ephemera vulgata*, or MAY-FLY, so plentiful in the month of summer about the banks of rivers and stagnant waters. It is of a dun colour, with transparent wings mottled with brown, and is … extremity of the body with … black bristles. It flutters in the air at the surface of the water, and may day is generally seen in a … e, with the wings closed, and … sition. The larva is about … gth, having several finny … side the body, and at the … feathered processes: it has … moderately long antennæ, … the complete insect are ex… When arrived at its full … scribed, it exhibits the rudi… on the back, in the form of a … breathe or scales; its colour … ish or whitish brown. It is … remarkable in this kind of larva … before it assumes the condition … complete insect. This change … the evening, when the larva … face of the water, and soon … of its skin, flies to some neighbouring … and after having remained … per, again casts its pellicle, … its ultimate or perfect form. … if so in its larva state, it is a … of several kinds of fishes, par… Trout. In some seasons it … plentiful, the air in the immediate … of its natal waters being frequented by its numbers during … rs.

…, the well known writer … larvæ, that notwithstanding … which the eggs, larvæ, and … nymphs are … exposed, from the attacks … and predaceous aquatic insects … of specimens which arrive … state is sometimes so immense, … on of one species with white … or *albipennis*) has been compared … of snow; whilst, in some … where they abound, it is the … on their dead bodies into … them for manure. The fishes … eagerly wait for them; and so … numbers which fall into the … fishermen call them manna.

… celebrated of all the Ephemeræ popularly termed the … of a white colour, with the … the upper wings black or deep … tail is furnished with two long … insect is commemorated as a … instance of the brevity of … soon after its change into the … survives but a very few hours, … course of the *same evening* … *It is to be recollected, however*, that its larva lives in its aquatic state two, and even sometimes nearly three years; but when arrived at the proper period, it rises in the evening to the surface of the water; and the skin of the back cracking, and flying off with an elastic motion, the Fly is almost instantly evolved, as in the common species; after which it flies to the nearest convenient spot, and again divesting itself of its pellicle, appears in its last and perfect state. It now flies again to the water, and fluttering over its surface, as if sporting with its innumerable companions, enjoys all the pleasures of its short remainder of existence: the female breeds, deposits her eggs, and, like the male, perishes before or with the dawn of the approaching day. There are several other species of Ephemeræ, of a smaller kind than the foregoing, but presenting no remarkable peculiarity or difference worth describing.

EPIMACHUS. A genus of birds allied to the Hoopoes, having, like them, a slender beak, but with velvety or scale-like feathers partly covering the nostrils, as in the Birds of Paradise. The plumage in the species figured is of the most gorgeous description. It is of a deep black, with the feathers magnificently glossed with various colours; the

EPIMACHUS MAGNIFICUS

long plumes on the flanks being elongated, turned up, and frizzled: the edges of a burnished steel blue, sometimes inclining to green. It is a native of some of the islands in the Eastern seas, and, like the Birds of Paradise, to which some naturalists have thought it allied, would form a truly beautiful ornament to our aviaries and zoological gardens.

EPOMOPHORUS. A name applied by Mr. Bennett to one or two species of Foxbats (*Pteropidæ*) from W. Africa, which have remarkable tufts of hairs on the sides.

EQUUS. The generic name of certain quadrupeds with solid or undivided hoofs; as the Horse, the Ass, and the Zebra. "This family," says Mr. Gray, speaking of the *Equidæ*, (which is distinguished from all other animals by its undivided hoof, formed of the *two anterior* toes soldered together, its *simple stomach*, and its female having the *teat placed on the pubes*) "may be divided

into two very distinct types of form: the one, the Asses and the Zebras, which are always whitish and more or less banded with blackish-brown, and always have a distinct dorsal line, the tail only bristly at the end, and have warts only on the arms and none on the hind legs; and the true Horses, which are not banded, have no dorsal line, are furnished with warts on their arms and legs, and have long hair on the tail, from its insertion to its extremity." Of these species the Horse is by far the most valuable, as well as the most widely distributed over the globe. Dental character of this genus:—six incisors in the front of both the upper and lower jaws, one canine or tusk, and six molars or grinders, on each side of both jaws; in all forty. [See HORSE.]

ERINACEUS. [See HEDGEHOG.]

ERIOMYS. [See CHINCHILLA.]

ERIPHIA. A genus of Decapod short-tailed Crustacea, of which there are several species; one of which, *E. spinifrons*, is com-

SOUTY ERIPHIA.—(ERIPHIA SONAGHA.)

mon in the Mediterranean. The *E. gonagra* is a fine species, with tuberculated fore-legs, found in Brazil. In the Indian Ocean other species are found.

ERMINE. (*Mustela erminea.*) This little digitigrade animal, which is also called the STOAT, resembles in its general appearance the Weasel, but is considerably larger, the Ermine measuring ten inches in length, independent of the tail, whereas the Weasel seldom exceeds six. The colour of the Stoat is a reddish-brown above, white beneath, the tip of the tail being constantly black, whatever may be the cast of colour on the body; for the Stoat, in the northern regions, becomes milk-white during the winter, in which state it is known as the *Ermine:* we may therefore properly say, that an Ermine is a Stoat in its winter dress. Like the Weasel, it lives in hollows under the roots of trees; in banks near rivulets; and it preys on birds, poultry, rats, and all kinds of smaller animals, as well as on rabbits, leverets, &c.; it is also a great devourer of eggs. It is an inhabitant both of the northern parts of Europe and of Asia; and is also found in many parts of North America. Like many other species of this genus, the Ermine has the faculty of ejecting a fluid of a strong musky odour. Its fur *is short, soft,* and silky; its pure white *winter coat being* much longer, thicker, and *finer than that of* summer. The fur of the Ermine is in great request; it was f one of the insignia of royalty, and used by the judges. When used as of cloaks, &c., the black tuft from is sewed to the skin at regular distan

In the neighbourhood of Hudson Ermine are very abundant, parties the barren grounds and open plai Norway and Siberia also their skin great article of commerce. Duri winter it is extremely difficult to dist them, from their colour so closely res that of the snow: and they are ge either taken in traps, or shot with arrows. This animal, which in the of its prey is one of the boldest of its not readily tamed; but when caug kept in a cage, it still exhibits every of its ferocious and savage charac killing or injuring every thing wi reach.

ERNE. A local name for the Sea (*Haliaetus albicilla*) which frequents shores. It is distinguished from t Eagles, by the absence of feathers lower part of the tarsi. [See EAGLES

ERODY. The name given to a g rial bird (*Dromas ardeola*) allied Trumpeter, and found both in Ind Abyssinia. It is swift of foot, and wa by Mr. Salt in Abyssinia during La lentia's travels.

EROTYLUS: EROTYLIDÆ. A and family of Tetramerous Cole abounding in South America, whe feed generally on fungi. They fo subject of an admirable monograph Lacordaire, who has published a

VIOLET-COLOURED EROTYLUS (EROTYLUS VIOLACEUS.)

volume on the numerous species. small British species belonging to the *Triplax* and *Tritoma* are found i country. Most of the South Am species have the maxillary palpi ter ing in a large crescent-shaped join antennæ end in a very distinct and liated mass.

ERYCINA. A genus of Conchif Bivalves, found in the sand on the of New Holland and the Mediterr Shell ovate or triangular, transverse valve, smooth; hinge with a ligam pit, two diverging cardinal and two teeth in each valve. There are fossil, and two recent species. Al name of a genus of Worms. Leuckart

NIDÆ. A family of Lepidopterous
tinguished by the fore legs of the
g only rudimental; the anal edge
d wings is but slightly prominent,
dominal rail is either open or
rtially or entirely, by a false ner-
e caterpillars are very short, pu-
r hairy; and the chrysalis is short
rusted. These insects are of small
enerally of very brilliant colours,
ed, and their wings marked with
ey are almost exclusively confined
America. Their flight is very rapid,
majority of them rest with their
ended on the under side of leaves.
the species have the hind wings
into two or more tails, often of
al length; in this particular re-
the genera Papilio and Thecla;
ear a certain resemblance to the
ae, Heliconii, &c. See the fine work
Doubleday and Hewitson for the
genera and species of this family,
the feeding forms are beautifully
In the British Museum there is a
e collection of them.

ESOCIDÆ. A genus and family
bone fishes, many of them inhabit-
rivers. They are destitute of the
fin, and the border of their upper
ther formed solely by the inter-
, or they have no teeth. The
sub-genera vary greatly in the form
dy, the size of the scales, the length
aws, and other striking points. [See

IMAUX DOG. [See Dog.]

ERIA. A genus of Conchifera, or
, found in the rivers of Africa and
ecar. Shell inequivalve, very ir-
; teeth none; bosses short and in-
; ligament external, penetrating
nto the shell. In its foliated struc-
t toothless hinge it resembles *Ostrea*,
rs from it in having two muscular
ions. The exterior is rugged and
rly shaped, but the interior of the
pearly, of a vivid green colour, and
small blisters, which are said to be
by small particles of sand being se-
ly introduced during the formation
mucous fluid. These shells are abun-
the Nile above the cataracts, where
abitants collect them for the purposes
ornating their tombs with them. In
chad, in Central Africa, Major Den-
nd a fine species of this genus.

HIRUS; EUCHIRIDÆ, or Long-
Beetle. A remarkable genus
rally of Lamellicorn beetles; the
known species of which is represented
two accompanying figures; one of
the male, and the other the female.
cies (*E. longimanus*) is found in the
ndies, where it seems to be by no
common. It is of a rich reddish-
colour. The two cuts will show the
the sexes of this species better than
ot elaborate description. *The insect
probably a native of one of the islands
East Indian Archipelago. Another*

LONG-HANDED BEETLE: MALE
(EUCHIRUS LONGIMANUS.)

species (*E. quadrilineatus*) in the British Museum collection, was found by Mr. Cuming in the Philippine Islands. It is distinguished, among other marks, by four lon-

LONG-HANDED BEETLE: FEMALE.
(EUCHIRUS LONGIMANUS.)

gitudinal lines on the elytra. A third most gorgeous species, has been named by Mr. Hope *Chirotonus Macleaii*. It is of the most *brilliant metallic* green; the elytra being *black, with variously* shaped orange spots. *A closely* allied species to this, also in the

British Museum, and described by Mr. Gray, is the *Ch. Parrii*. Another insect belonging to this group is the *Trogomacrus Arbacea*, from Smyrna, described by Pallas, and figured by Mr. Newman in the Entomological Magazine. Little, if any thing, is known of the habits of this remarkable group of Lamellicorn beetles.

EUDYNAMIS. A genus of Cuckoos, found in Asia and the Eastern islands. The best known species is the *Eudynamis orientalis*. [See CUCKOO.]

EUMENIDÆ. A family of Hymenopterous insects, of predaceous habits. Reaumur has given the history of a species of this family (*Odynerus*). "This insect, says Mr. Westwood, in his useful compilation, the 'Introduction to the Modern Classification of Insects,' "during the early months of summer, forms a burrow in the sand to the depth of several inches, in which it constructs its cells; besides which it builds, with the grains of sand brought up whilst burrowing, a tubular entrance to the burrow, often more than an inch long, and more or less curved, the grains of sand of which it is formed being agglutinated together; each female forms several of these burrows, and deposits an egg in each cell, together with a number of green caterpillars, which it arranges in a spiral direction, one being applied against the other, and which serve as food for the larvæ when hatched. When the store of food is secured, the insect closes the mouth of the burrow, employing the grains of sand of which the funnel was composed for that purpose. The larvæ of Odynerus are fleshy grubs, destitute of feet, with transverse dorsal tubercles serving in their stead. * * * Geoffroy has described a species of Eumenes which differs somewhat in its habits from the rest of this family. This species constructs, upon the stems of plants, especially heath, small spherical nests, formed of fine earth: at first a hole is left at the top, through which the parent fills the cell with honey, and deposits a single egg therein; the hole is then closed up, and the larva, when hatched, feeds on the honey, undergoes its metamorphosis, and makes its escape through a hole which it forms at the side of the cell, which contains but a single insect."

EUPHEMA. A genus of the *Psittacidæ* or parrot tribe; several species of which are found in Australia. The bill is almost always very much concealed by the long feathers about the face. In Mr. Gould's national work, "The Birds of Australia," several species are described and elegantly figured: of these we may specify —

EUPHEMA AURANTIA, or ORANGE-BELLIED GRASS PARAKEET. This species is not very abundant in Van Diemen's Land, but in Actæon Islands, in D'Entrecastean Channel, it is the only bird enlivening the solitary place.

EUPHEMA CHRYSOSTOMA, or BLUE-BANDED PARAKEET. This beautiful bird is a *summer resident* of Van Diemen's Land, arriving *there in September*, and leaving in February and March; running over the ground, and treading its way among the grasses, to feed on the seeds. Its flight is very quick. It can easily be domesticated, and a more elegant or beautiful pet can scarcely be conceived.

EUPHEMA ELEGANS, or ELEGANT GRASS PARAKEET. This species inhabits South Australia, and is the "Ground Parakeet" of the colonists. It feeds on grass seeds;

ELEGANT GRASS PARAKEET (EUPHEMA ELEGANS.)

congregating in the hot seasons (where there is water in small pools) in almost incredible numbers. Its flight is rapid and even, and frequently at great altitudes. For our figure of this elegant bird we are indebted to the work of Mr. Gould.

EUPHEMA SPLENDIDA, or SPLENDID GRASS PARAKEET, inhabits the neighbourhood of the Swan River, in Australia. [See MELOPSITTACUS.]

EUPHONIA. A genus of birds allied to the TANAGERS, of which there are many species. We restrict ourselves in this article to the EUPHONIA JAMAICA. This is a small Passerine bird, known in the West Indies as the "Blue Quit," and sometimes also called the Blue Sparrow. It is about four inches and a half long, and rather of an inelegant shape from the abrupt shortness of its tail. The upper parts of the male are of a glossy blue, sometimes tinged with green; throat, breast, and sides pale gray; belly yellow; beak gray, the ridge and tip black. It is common about homesteads, frequenting fruit-trees, busily hopping about the twigs and fruits and picking in any position. It is by no means destitute of musical powers, sometimes delighting in a soft warbling repetition of a single note, and at others treating its hearers with a real song, sweet and musical. Mr. Hill, a gentleman of Jamaica, whose ornithological notes contribute to the entertaining character of Mr. Gosse's work, gives the following description of this little active warbler. "Near the plazza of my house a cotton-bush has flung out its knots of white filaments. Hither comes the bird at this season (February) to gather materials for constructing their nests. The Blue Sparrow, a pretty little frugivorous bird that sings in our fruit trees, all the year round, its merry twittering song, has been busily

engaged with his mate collecting bill-fulls of cotton. It did not seem to be a thing immediately settled that they should set to work and gather their materials at once. They had alighted on the tree as if they had very unexpectedly found what they were seeking. The male began to twitter a song of joy, dancing and jumping about; and the female, intermingling every now and then a chirp, frisked from stem to stem, and did very little more than survey the riches of the tree: at last she plucked now and then a bill-full of the filaments, and spreading it to flaunt to the wind, tossed it away, as if she had been merely showing that it every way answered the purpose of length and softness, and was in every respect the thing they wanted." We are also told that they build a very snug domed nest, globular in form, and about as large as an infant's head, with an opening in one side, composed of dry grass, the dried stems of the *Tillandsia*, tendrils of passion-flower, bits of rag, &c., profusely intermixed with cotton and the down of plants.

EUPLOCOMUS. A genus of Gallinaceous birds found in Asia, the males of which have generally very fine plumage. The Fire-backed Pheasant is one of these. [See PHEASANT.]

EURYALE. A remarkable genus of Radiated animals belonging to the *Asteriadæ*, or Star-fishes, in which each division of the rays is branched again and again, so

WANTED RUFFLE.
(RUFFLE'S VENUSCORTIN.)

that the whole resembles a bunch of serpents' tails. The figure which we subjoin represents the whole of the body, with only two of the rays given in detail, as the cut would otherwise occupy too much space. They are sometimes known by the name of Medusa's heads. These little branches must be of singular use to the animal in securing its prey. In the cases of *Radiatæ* at the British Museum may be seen some fine examples of these "furies of the deep." [See STAR-FISHES.]

EURYNOME. A genus of Crustacea, belonging to the family *Lambridæ;* of which one species is found in the British seas — the *Eurynome aspera.* It is a pretty little species, rough with projecting knobs; often symmetrically arranged, and of a reddish colour. The fore legs in the male are elongated.

EVANIADÆ. A family of Hymenopterous insects, of small extent, and not possessing any remarkable points of interest. The species are parasitical, the *Evania appendigaster* being attached to the Cockroach (*Blatta orientalis*).

EXOCETUS. [See FLYING-FISH.]

EWE. The female of the Sheep kind. [See SHEEP.]

FALCONIDÆ. The genus *Falco* of authors may be considered as constituting five tribes or families of Accipitrine birds, viz. Eagles, Falcons, Kites, Buzzards, and Hawks. They prey, in general, on living animals: the species are extremely numerous; the females are larger than the males; and they vary considerably in their plumage according to age and other circumstances. They are characterized by a powerful form of the beak, which is generally armed with a kind of tooth or process on each side near the apex; and their wings are strong, long, and pointed: they are likewise distinguished by their undaunted courage and great activity. The true Falcons are peculiarly symmetrical in their forms; their flight is both graceful and vigorous; they possess great strength as well as flexibility; and their sight is so very acute, that they are enabled to discern their prey at a great distance, and to pounce down upon it with unerring certainty. The Falcon builds in the hollows of rocks exposed to the south; usually laying its eggs about the close of winter, or very early in the spring: these are often four in number, and are white, spotted with brown. So rapid is said to be the growth of the young, that in the space of three months they equal the parents in size. There are many varieties.

The "noble" breed of Falcons which our ancestors introduced into their service, and so greatly prized, are distinguished from the "ignoble" or baser race of kites, sparrow-hawks, and buzzards, by the peculiar length of their wings, which reach almost as far as their tails; this superiority of wing giving them confidence in the pursuit of the game, and their great power emboldening them to attack it. To train these birds, however, required no small degree of skill and assiduity: but so thoroughly antiquated and obsolete has the once princely sport of Falconry become, that we think the reader will commend us for omitting that which a few centuries ago would have been regarded as *indispensable:* we mean, a circumstantial account of the training, or education, neces-

sary to teach these magnanimous birds the duties of their office. Numberless indeed are the treatises which have been written on the subject, but in language so fraught with professional technicalities, that at the present day they would be almost unintelligible.

The Jerfalcon. (*Falco Gyrfalco.*) This elegant species is generally considered as the boldest and most beautiful of the tribe, approaching in size nearly to that of the Osprey. It is a native of the cold and dreary regions of the north, and is found in Iceland, Russia, Norway, and Baffin's Bay. Its general colour is brown above, in deeper and lighter variegations, and whitish beneath, with brown longitudinal spots; the tail is crossed by numerous deeper and lighter bands, and the bill and legs are generally of a bluish or a pale yellow hue. Buffon mentions three varieties of the Jerfalcon; the first and second very similar to what we have just described; and another which is entirely white. Next to the Eagle, it is the most formidable, active, and intrepid of all rapacious birds, and the most esteemed for falconry. It boldly attacks the largest of the feathered race; and although it is often transported from the coldest regions to some of the warmest, its strength is not diminished by the change of climate, nor its vivacity blunted.

The Peregrine Falcon. (*Falco Peregrinus.*) This species is about eighteen inches in length, and three feet six inches wide when its wings are extended; and in its full growth and plumage is a very fine-looking, strong, and bold bird. The bill is pale blue, tipped with black; short, strong, and much hooked. The general colour on the upper parts is a deep bluish lead-colour, barred with black, but the crown of the head and upper part of the neck nearly black: the greater wing-feathers dusky, barred with oval white spots; and the tail of a dark dingy ash, spotted with brownish black,

PEREGRINE FALCON.—(FALCO PEREGRINUS.)

and tipped with pale brown. The under parts, from the chin to the bottom of the breast, are yellowish white, with a deep brown streak down the shaft of each feather; and the remainder are of a dull white, *beautifully and* distinctly barred with dark *brown. The thighs* are long, and marked with small heart-shaped spots; legs short, strong, and yellow; claws black, and the toes long. The Peregrine Falcon appears to be a general inhabitant of Europe and Asia; it is common in the north of Scotland, and is known to breed on the rocks of Llandidno, in Caernarvonshire; which have been long celebrated for producing a "generous race."

The Black-cheeked Falcon. (*Falco melanogenys.*) A noble species of the *Falconidæ*, noted for its bold and rapacious habits, which is universally dispersed over the whole southern portion of Australia, including Van Diemen's Land. Mr. Gould says it gives preference to steep rocky cliffs, and the sides of precipitous gullies, rather than to fertile and woodland districts. It there dwells in pairs throughout the year, much after the manner of the Peregrine Falcon; its nest being placed in the most precipitous and inaccessible parts of the rocks. Their eggs are two in number, the ground colour buff, thickly blotched with deep reddish chestnut. In alluding to the strength and courage of this bird, Mr. Gould has the following comment: "Thus we find in this Falcon a bird well adapted for the sport of Falconry, which, though fallen into disuse in Europe, may at some future time be revived in this new and rising country, since its lagoons and water-courses are well stocked with herons and cranes, and its vast plains are admirably suited to such pastime. The introduction of hounds for the purpose of chasing the native dog (Dingo) and the Kangaroo has already taken place in Australia; and perhaps it is not too much to look forward to the time when the noble science of Falconry shall be resorted to by the colonists. A finer mews of birds could not be formed in any country than in Australia; with such typical Falcons as *F. hypoleucus*, *F. melanogenys*, and *F. frontatus*."

The White-breasted Falcon. (*Falco hypoleucus.*) This fine bird, which greatly resembles the Jerfalcon, belongs to the Australian fauna, and is interesting, as Mr. Gould remarks, "as adding another species to the true or typical Falcons, and as affording another proof of the beautiful analogies which exist between species of certain groups of the southern and northern hemisphere."

The Gentil, or Gentle Falcon. (*Falco Gentilis.*) This is described as somewhat larger than a Goshawk, and of an elegant form. The bill is lead colour; the eere and legs are yellow; and the head is of a light ferruginous colour, with oblong black spots. The whole of the under parts are whitish, with brown spots and dashes; the back is brown; the quill-feathers, which are dusky, are barred on their exterior webs with black, and on the lower parts of their inner ones with white: the wings reach to the middle of the tail, which is alternately banded with black and ash-colour, and tipped with white. The legs are yellow and rather short, and the thighs are well covered with feathers.

There are many other species and varieties; but to give a detailed description of

them all would be more monotonous than interesting.

Among the European nations the French and Germans seem to have been the first to encourage the practice of falconry; and the technical terms used by the English are evidently all borrowed or derived from the French. "In our own country," says Mr. Pennant, "I cannot trace the certainty of falconry till the reign of King Ethelbert the Saxon monarch, in the year 760, when he wrote to Germany for a brace of Falcons which would fly at cranes and bring them to the ground, as there were very few such in Kent. It seems highly probable that falconry had its rise in Scythia, and passed from thence to the northern parts of Europe. Tartary is even at present celebrated for its fine breed of Falcons; and the sport is in such general esteem that, according to Olearius, there was no hut but what had its Eagle or Falcon. The boundless plains of that country are as finely adapted to the diversion as the wooded or mountainous nature of most part of Europe is ill calculated for that rapid amusement." In England falconry seems to have continued in full glory till about the time of Cromwell, after which it appears to have gradually declined. With what ardour it was pursued in the reign of James I. may be gathered from the anecdote related by Mr. Pennant, who says that Sir James Monsen gave no less a sum than a thousand pounds for a cast of Hawks. [See EAGLE, HAWK, &c.]

FALLOW DEER. (*Cervus dama.*) This animal, so graceful an ornament of our parks, in its general form greatly resembles the Stag, having the same elegance of aspect with a more gentle disposition. It is, however, considerably smaller, being only about

FALLOW DEER.—(CERVUS DAMA.)

three feet, or rather less, to the top of the shoulder. It is generally of a brownish bay colour, more or less beautifully spotted; and it has a longer tail. The *horns of the Fallow Deer are broad and palmated at* their extremities, pointing a little forward, and branched on their hinder sides; they have two sharp and slender brow-antlers, and, above them, two small slender branches; whereas every branch of a Stag's horn is shaped like the stem that supports it: the form of the horns is, in fact, the *chief* mark of distinction between the two species.

The manners of the Fallow Deer resemble those of the Stag, but it is less delicate in the choice of its food, and browses much closer. It arrives at full growth and perfection in about three years, and is said to live about twenty. The male is called a *buck*. In the first year he is a *fawn*; in his second, a *pricket*; in his third, a *sorel*; in his fourth, a *sore*; in his fifth, a *buck of the first head*; and in his sixth, a *great buck*. The female, or *doe*, in her first year is called a *fawn*; and in her second, a *teg*. The process of acquiring and shedding the horns is in every respect similar to that which takes place in the stag; but the form of them, as we have before described, is very different, and the furrows, &c. are less distinctly marked. Although the males are much less furious in the rutting-season than the Stag, they frequently fight desperately for the possession of the females; and it is not till after repeated conflicts that one buck obtains the sovereignty of the whole. It also often happens that a herd of Fallow-Deer will divide into two parties, and engage each other with great ardour and obstinacy, as if ambitious of securing some favourite spot of pasturage, and of driving the vanquished party into the coarser and more sterile parts.

When closely pursued by the hunters, the buck makes towards some strong hold or thicket with which he is acquainted, either in the more shady parts of a wood, or the steep of some mountain; nor does he fly far before the hounds, nor cross and double like the stag: he will take the water, it is true, when hard run; but in strength, cunning, and courage, he is much inferior to the stag, and, consequently, he affords neither so long nor so various a chace. In England there are two kinds of Fallow Deer: the beautiful dappled kind, supposed to have been brought from the South of Europe, or the Western parts of Asia; and the very deep brown variety, which were brought from Norway by James I., who, while there, noticed that they could endure the cold of that severe climate, and subsist throughout the winter without fodder. Nothing can exceed, in richness and delicacy, the venison of the Fallow Deer. The skins of both the Buck and the Doe are unrivalled for durability and softness; and the horns, like those of the stag, are manufactured into knife handles, &c.; while from the refuse, ammonia (popularly known as *hartshorn*) is extracted.

FANFOOT [MOTHS]. A name given by collectors to Moths of the genus *Polypogon*.

FANTAIL. (*Rhipidura.*) A genus of Birds belonging to the family *Muscicapidæ*, and found in Australia. There are more than one species, but we restrict ourselves here to the

RHIPIDURA ALBISCAPA, or WHITE-SHAFTED FANTAIL. This bird inhabits Van Diemen's Land and South Australia. It is generally seen in pairs, among trees: while in the air it assumes a number of lively and beautiful positions; at one moment mounting almost perpendicularly, spreading out its tail constantly to the full extent, and frequently tumbling over in the descent. It is a very tame bird, allowing near approach without showing the least timidity, and will even enter houses in the bush, in pursuit of gnats and other insects. In the breeding season it is not so familiar. Its nest is

WHITE-SHAFTED FANTAIL.
(RHIPIDURA ALBISCAPA.)

very elegant, resembling a wine glass in shape; and is generally composed of the inner bark of a Eucalyptus, neatly lined with the down of the tree-fern intermingled with flowering stalks of moss, and outwardly matted together with the webs of spiders, which not only serve to envelope the nest, but also strengthen its attachment to the branch on which it is constructed, which is always within a few feet of the ground. Eggs two in number. Our figure is derived from the beautiful work of Mr. Gould's, and shows the bird flying over its nest.

FASCIOLA, or FLUKE. (*Fasciola* [*Distoma*] *hepatica*.) A parasitical animal, known to infest the liver of the sheep, and believed to greatly aggravate the symptoms of that much-dreaded disease called the *rot*. It is also found in other ruminants, the *Horse*, the *Hog*, and even in Man. It is from three quarters of an inch to an inch and a quarter in length; its form is of an oval leaf, pointed at the poste tremity, and with a narrow portio anterior. It has two suckers, on base of this narrow portion, which two branched tubes: behind thi

FLUKE. — (FASCIOLA HEPATIC

there is an erectile tentaculum, w pears to be the male organ; behin is the second sucker. As in mos Mollusca, all the individuals appe bisexual. The eyes are placed on conspicuous part of the head, and eyes of birds, they are provided wi rings, by means of which they can great range of focal lengths. The multiplication in these parasites is and the ducts of a single liver h found to contain more than a t while the germs are quite innumer is probable that these Flukes, or at the germs of them, exist in the wa the plants of humid and marshy pl it seems that even the healthy shee few of them in the winter months, diseased ones vast numbers; and rotten sheep taint both the flock pasture.

FASCIOLARIA. A genus of found in the Indian seas, the Anti some of which are very beautiful fusiform, and not very thick; spir derate length, conical, consisting rounded, or angulated whorls; wide, terminating in a long, strai canal; columellar lip with severa folds; operculum horny, pyriform.

FATHER-LASHER. (*Cottus bub* Acanthopterygious fish, seldom a eight or ten inches in length, genera on the rocky coasts of this island, w is immediately recognized by its l formidable head, armed with long s

FATHER-LASHER.—(COTTUS BU

means of which it immediately com enemy that attacks it, defeating its a

nd the belly is a silvery white. It
mall crustacea. In Greenland this
es a much larger size, and forms
ipal food of the natives, who make
ps, which is said to be both whole-
palatable.

. An appellation given to a buck
the first year. [See DEER.]

: FELIDÆ. The name given to
of the Cat kind, forming a large
family of carnivorous quadrupeds,
the lion, tiger, leopard, lynx, do-
t, &c. They are characterized by
trong, sharp, retractile talons on the
by the mouth being equally fitted for
ans of destruction. They are all ex-
carnivorous; they refuse vegetable
all in a state of nature they will not,
pressed by hunger, devour any flesh
they have not themselves killed.
e, consequently, of all Mammalia,
destructive in their propensities;
ir bodily powers are in admirable
ee with their instincts. There are
regards in which the muscles of the
limbs are more fully developed:
ose is vigorous, but agile; the limbs
knit, but supple; and every motion
free, and graceful. There is no su-
s flesh; but the whole seems com-
of bone, nerve, muscle, and sinew.
many animals on which they prey
en in decrease, in consequence of
nger and more sleader limbs, there
which approach them in the power
g and bounding. The under sur-
their feet being provided with elastic
cushions, their footfall is rendered
; their usual gait is slow, cautious,
tiful; and when the impetus of the
s added to the stroke of the paw,
owr is almost irresistible. They
the sense of smell in a very moderate
compared with the Canidæ; but
ht is most acute, adapted for vision
as well as by day; the sense of
le also exquisite; and the long

and neck. He has the credit too of a greater share of boldness and generosity than the other cats. His vocal organs also exhibit a modification of structure not present in the other felines, by which he has the power to utter his tremendous roar—a roar which, when sent forth under the excitement of hunger, scares from their hiding places the timid ruminants which may be lurking within the compass of its fearful reverberations. Among the felines, one group is characterized by the shortness of the tail, and the tuft of hair on the tips of the ears; this includes the lynxes.

"The cheetah, or hunting leopard, deviates most in the half-retractile condition of the talons, and the upright carriage of his body, from the true feline characters; and with these physical modifications is combined so much of the canine disposition, as enables this species to be used in packs for the purposes of the chase.

"The middle-sized cats, which lurk in the branches of trees, as the leopards, ocelots, &c., have a fulvous ground colour, broken by irregular dark spots; a marking which admirably adapts them for concealment amidst foliage. A similar relation of adaptation to the peculiar theatre of their destructive habits may be traced in other species. The tiger, for example, which prowls on the ground, and creeps stealthily towards his victim between the stems of the trees and plants of the jungle, has his bright ground colour interrupted with black vertical stripes. The lion, which traverses the parched deserts of Africa, and lies in wait to intercept the antelopes which bound in troops from one oasis to another, would be rendered too conspicuous if his tawny hide were ornamented with the stripes or spots that characterize the feline livery: these, therefore, which are obvious enough in the earlier periods of his existence, become obliterated as he attains to maturity. A smaller feline species, the puma, or American lion, which plays the predatory character in a corresponding theatre of the New World, presents a similar uniformity of co-

it has a taper tail. It inhabits, says Mr. Pennant, the vast deserts of Sears, which extend beyond Mount Atlas; and burrows

NUBIAN FENNEC.
(MEGALOTIS NUBIANUS.)

in sandy ground, which shows the use of valves to the ears. It is so exceedingly swift that it is very rarely taken alive: feeds on insects, especially locusts; sits on its rump; is very vigilant, and barks like a dog, but much shriller. A fine species of Fennec was lately brought alive from S. Africa, and presented to the Zoological Society of London, by Capt. Sir Edw. Belcher. There seem to be two, if not three, species.

FERÆ. The name of an order of Mammalia, to which the Cats, Dogs, Bears, &c. belong. [See CARNIVORA.]

FERRET. (*Mustela furo.*) This useful but ferocious little animal, of the weasel kind, is kept in a domesticated state in Europe, and is used for rabbit-hunting, as well as for destroying rats. In its general form it resembles the Polecat, but is rather smaller; its usual length being about thirteen inches, exclusive of the tail, which is about

FERRET,—(MUSTELA FURO.)

five. It has a very sharp nose, red and fiery eyes, and round ears. Its colour is a pale yellow, but it also occasionally partakes of all the colours common to the weasel kind, white, black, brown, &c. In the slenderness of its body and the shortness of its legs it also resembles the weasel. In its wild state it is a native of Africa, whence it was originally imported into Spain, and from Spain gradually introduced into other European countries. The cold of our winters is, in fact, too severe for it, so that it becomes necessary to keep it in a warm box, with wool or some other substance in which it may *imbed itself*. In this state it sleeps almost *continually*; and when awake, immediately *begins to search* about for food; that which it is usually given is bread and milk, but its favourite food is the blood of smaller animals. It is by nature an enemy to the rat, bit; and Buffon affirms, that whenever dead rabbit is presented for the first time a young Ferret, he flies upon it in an instant and bites it with great fury; but if it alive, he seizes it by the throat and sucks blood. When sent into the burrows of rabbits, the Ferret is always muzzled, that may not kill the rabbits in their holes, only drive them out to be caught in the prepared for them. If the Ferret is unmuzzled he is often lost; for after sucking the blood of his victim, he generally falls asleep in the burrow, from whence he cannot only when by the calls of hunger he is forth in pursuit of fresh prey; and thus, the midst of abundance, he continues lead a rapacious life, till the severity of weather proves fatal to him.

The Ferret, as we have before said, is nature is ferocious; it is tame without tachment; and such is its appetite for bl that it has been known to attack and kill children in their cradles. It is of irascible nature, and when irritated, odour it emits is very disagreeable, and bite not easily cured. The female has broods in the year, each consisting of six to nine. She not unfrequently devours her young as soon as they are born; in which case she usually has another brood very soon

FIBER. A genus of glirine Mammalia close to the Beaver, the only known species of which is the N. American *Ondrata*, *Castor zibethicus*, L. [See BEAVER.]

FILANDER. The name given by Shaw to the E. India Island Kangaroo, *Halmaturus Asiaticus*.

FINFOOTS. The name applied to a grallatorial birds, allied to the Coots, closely connected with the web-footed one. One of these, *Heliornis Surinamensis*, native of S. America; while the other, *Podica Senegalensis*, or African Finfoot, the name implies, a native of W. Africa.

FILARIA. A genus of Entozoa, having a long, slender, and thread-like body, resembling that of the *Gordius* among the Annelida, but with mere marks on the body instead of the rings. These parasitic animals are imbedded in the parenchyma of the glandular tissues, between the coats of the viscera, &c., often existing in numerous numbers contained in a common cyst or tunic. They are not confined to the larger animals, but are found in insects and their larvæ, and even in various Molluscs. Of these the most common, or at all events the most dreaded by man, is the *Filaria Medinensis*, or Guinea Worm, a most troublesome animal in hot climates, where it insinuates itself under the skin, generally of the leg, and somewhere causes the most excruciating pain. At the seventh anniversary of the Microscopical Society of London, held Feb. 25, 1842, a paper was read, entitled "Observations on the Structure and Nature of the Filaria Medinensis, or Guinea Worm," by G. B. Esq. The author, before entering upon

…nal, and of uniform size, or nearly …ughout; there is no anal or other …visible at the caudal extremity of …n, or in any part of its length. The …f the worm is occupied by innume…rous. In some worms, or in some …them, these occupy the whole space, …others a grumous matter predomi…nd only a few young are here and …bedded in it. The young *Filariæ* …nsiderably in their outward form …parent worm, being furnished with …perior tail, which constitutes about …o of the length of the body. The …*Filaria Medinensis* as a parasite ex…er from twelve to eighteen months. …eived at maturity, it comes to the …and is either brought away or comes …concoal, thus affording an opportu…the dispersion of the vivacious young …ich its interior is crammed. From …t, the author suggested that *Filaria* …se, in its parasitic form, presented …ase, among the nematoid Entozoa, …rmediate or transitory generation, …have been shown by several natu…exist in most of the lower classes …ls.

…FARE. (*Turdus pilaris.*) A bird …rush kind, ten inches in length, and …about four ounces. The head is …ered, inclining to olive, and spotted …ck; the back and greater coverts …ings are of a deep chestnut; the …ad breast yellow, regularly spotted …k; the belly and thighs yellowish-…ail dark brown; legs dusky brown; …ow. The Fieldfare is a migratory …king its appearance in this country …e beginning of October, in order to …e rigorous winters of the north, …it sometimes comes in great flocks, …g to the severity of the season, and …about the latter end of February …eginning of March. It builds its …he hottest trees; and feeds on hips, …d other berries, with various kinds …main in the upland pastures, feeding promiscuously as they can. In my younger days, a keen, unwearied sportsman, it was always observable, that in hard weather these birds increased prodigiously in number in the counties far distant from the meadow lands, though we knew not the reason; and we usually against this time provided tempting bushes of haws, preserved in a barn, to place in frequented hedges, near our secret standings. When the Fieldfare first arrives, its flesh is dark, thin, and scurfy; but, having fed a little time in the hedges, its rump and side veins are covered with fat. This is, in part, attributable to suppression of perspiration by the cold, and partly to a nutritive farinaceous food; its flesh at the time becoming bluish and clean. The upland birds are in this state, from perhaps the end of November till the end of January, according as the hedge fruit has held out; and at this period they are comparatively tame: afterwards, though the flights may be large, they become wild; and the flesh, assuming its darkness, manifests that their food has not been farinaceous. The distant foreign migrations, which have been stated to take place from the meadows of the Severn, I believe to be only these inland trips; and that the supposed migrators returned to those stations fat and in good condition, owing to their having fed during their absence on the nutritious berry of the white thorn. * * * Perfectly gregarious as the Fieldfare is, yet we observe every year, in some tall hedge-row, or little quiet pasture, two or three of them that have withdrawn from the main flocks, and there associate with the blackbird and the thrush. They do not appear to be wounded birds, which from necessity have sought concealment and quiet, but to have retired from inclination; and I have reason to apprehend that these retreats are occasionally made for the purpose of forming nests, though they are afterwards abandoned without incubation. * * * These retiring birds linger with us late in the season, after all the main flights are departed, as if reluctant to leave us; but towards the middle

covered with very minute spines, and the general colour is grey, inclining to brown on the upper parts, and varied with irregular, dusky, subtransverse undulations and spots: both fins and tail are of a light brown colour, the latter marked by a few dusky bars. It is a native of the Indian and American seas, and feeds chiefly on crustaceous and testaceous marine animals. The European FILE-FISH (*Balistes capriscus*) is a species well known to the older authors as an inhabitant of the Mediterranean; and instances have occurred, though they are extremely rare, of their having been taken on our own coasts. The shape is ovate; general colour violaceous grey, sometimes variegated both on the body and fins with blue or red spots; first or small dorsal fin furnished with three or four rays, the first of which is very strong; tail rounded. The peculiar structure of the first or dorsal fin is worthy of notice: the bones or rays are so contrived to act in concert with considerable force in suddenly elevating the fin at pleasure; and how hard soever the foremost be pressed, it will not stir; but if the last be only lightly pressed, the other two immediately fall down with it; as a cross-bow is let off by pulling down the trigger. For this reason the fish is called on the Italian shores of the Mediterranean by the name of *Pesce Balestra*.

We shall describe but one more species, which is the singular species named the ACULEATED FILE-FISH (*Balistes aculeatus*). This is twelve or fourteen inches long; of a rufous brown colour, with a few purplish bands across the hinder part of the belly, and sometimes along the middle of the body: from the top of the eye to the crown four bright blue lines diverge, so as to form a blue-striped lozenge on that part; while from the bottom of the eye three or four longer lines of the same colour reach as far as the pectoral fin, the space between the lines being blackish. The skin is rough, and strongly crossed with reticular squares: on each side the end of the body three longitudinal rows of spines: tail rounded. It is a native of the Indian, American, and Red seas; varies in colour, and is sometimes of a bright golden hue.

FINCHES. A numerous group of birds, embracing not only some of the most beautiful, but also some of the most agreeable of the feathered tribe. [See FRINGILLIDÆ.]

FIRE-FLY. The name generally given to any insect which has the singular property of emitting a luminous secretion. [See ELATER: GLOW-WORM: LAMPYRIS.]

FISHING-FROG. [See ANGLER.]

FISSIROSTRES. The name of a tribe of Perching Birds, comprehending those which have a very wide gape, as the Swallow.

FISTULARIA. The name given to a genus of fishes, distinguished by elongated or tube-like noses and cylindrical bodies. [See PIPE-FISH.]

FITCHET. An animal of the weasel kind. [See POLECAT.]

FISH, or FISHES. (*Pisces.*) The name by which we designate the various species of a class of vertebrate animals inhabiting the water; which breathe through the medium of that fluid by means of branchiæ or gills, instead of lungs; which swim by means of fins; and are mostly covered with cartilaginous scales. Though the external form varies, by far the greater part possess considerable similarity of conformation—an elongated oval; a figure which enables them with greater celerity and ease than any other to traverse the aqueous element. They are also, for the most part, furnished with an air bladder in the interior of the body, (an oblong white membranous bag close to the back-bone,) by the dilation or compression of which their specific gravity is said to be varied, and by which they are enabled to rise and sink in the water. In most osseous fishes this organ extends along the back of the abdomen, between the kidneys and the chylopoietic viscera, and sometimes beneath the caudal vertebræ to near the end of the tail. It is seldom bifurcated; still more seldom divided lengthwise into two bladders; it is oftener divided crosswise into two compartments, which intercommunicate by a contracted orifice; or are quite separate. All parts of their bodies seem adapted to accelerate their motion; their fins, their tails, and the undulation of their back bones assist progression—their whole structure, in short, being as evidently adapted for swimming as that of a bird is for flight.

The fins consist of a thin elastic membrane supported by bony rays, and are denominated, according to their position, *dorsal*, *pectoral*, *ventral*, *anal*, or *caudal*: the dorsal and ventral fins apparently serve to balance the fish, and the pectoral to push the creature forward, or to arrest its progress when required; the anal fin occupies that part which lies between the anus and the tail, and this serves to keep the fish in its upright or vertical position: but the tail, which in some fishes is horizontal, and in others perpendicular, seems to be the grand instrument of motion; the fins being all subservient to it, and only giving direction to its powerful impetus. Yet the fins are important, not only as organs of motion, but as affording by their structure, position, and number, materials for distinguishing orders, families, and genera. The surface of the body is termed naked, when destitute of scales; scaly, when furnished with them; smooth, when the scales are without angles; lubricous, when provided with a mucus; loricate, or mailed, when enclosed in a hard integument; fasciate or banded, when marked with zones from the back to the belly; tuberculate, spinous, striped, reticulate, &c.

Nature appears to have fitted this class of animals with appetites and powers of an inferior kind; and formed them for a sort of passive existence in the heavy element in which they live. To preserve their own existence, and to continue it to their posterity, fill up the whole circle of their pursuits and enjoyments; and to these they seem impelled rather by necessity than choice.

are incapable of making any
ns; and they move forwards
whatever they can swallow,
joy. A craving desire of food
the ruling impulse to all their
s appetite impels them to en-
danger; and to their rapacity
pear prescribed. Even when
r water, and almost expiring,
swallow the very bait which
destruction. Their digestive
in some measure, to increase
ity of food they consume; and
has been known to devour a
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faculties in the cold maws of
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stomach is often seen, though
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omy,' observes, "A few species
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essential part, the acoustic
present, and the semicircular
developed within the labyrinth is without cochlea, and is rarely provided with a special chamber, but is lodged, in common with the brain, in the cranial cavity. The eyes are usually large, but are seldom defended by eyelids, and never served by a lachrymal organ. The alimentary canal is commonly short and simple, with its divisions not always clearly marked, the short and wide gullet being hardly distinguishable from the stomach. The pancreas, for the most part, retains its primitive condition of separate cæcal appendages to the duodenum. The heart consists essentially of one auricle, and one ventricle, receiving the venous blood, and propelling it to the gills; whence the circulation is continued over the entire body in vessels only, which are aided by the contraction of the surrounding muscular fibres. The blood of fishes is cold; its temperature being rarely elevated above that of the surrounding medium."

"All writers on animal mechanics," observes the able Professor just quoted, and to whom we are indebted for the following detached extracts, "have shown how admirably the whole form of the fish is adapted to the element in which it lives and moves: the viscera are packed in a small compass, in a cavity brought forwards close to the head, and whilst the consequent abrogation of the neck gives the advantage of a more fixed and resisting connection of the head to the trunk, a greater proportion of the trunk behind is left free for the development and allocation of the muscular masses which are to move the tail. In the caudal, which is usually the longest, portion of the trunk, transverse processes cease to be developed, whilst the dermal and intercalary spines shoot out from the middle line above and below, and give the vertically extended, compressed form, most efficient for the lateral strokes, by the rapid alternation of which the fish is propelled forwards in the diagonal, between the direction of those forces." "You may be reminded that all the vertebræ of the trunk are distinct from one another at one stage of the quadruped's development, as in the fish throughout life; and you might suppose that the absence of that development and confluence of certain vertebræ near the tail, to form a sacrum, was a mark of inferiority in fishes. But note what a hindrance such a fettering of the movements of the caudal vertebræ would be to creatures which progress by alternate vigorous inflections of a muscular tail. A sacrum is a consolidation of a greater or less proportion of the vertebral axis of the body, for the transference of more or less of the weight of the body upon limbs organized for its support on dry land; such a modification would have been useless to the fish, and not only useless, but a hindrance and a defect.

"The pectoral fins, those curtailed prototypes of the fore-limbs of other Vertebrata, with the last segment, or hand, alone projecting freely from the trunk, and swathed in a common undivided tegumentary sheath, present a condition analogous to that of the *embryo buds of the homologous members in the higher* Vertebrata. But what would

the hand alone projects, and can be applied, when the fish darts forwards, prone and flat, by flexion of the wrist, to the side of the trunk; or it may be extended at right angles, with its flat surfaces turned forwards and backwards, so as to check and arrest more or less suddenly, according to its degree of extension, the progress of the fish; its breadth may also be diminished or increased by approximating or divaricating the rays. In the act of flexion, the fin slightly rotates and gives an oblique stroke to the water. For these functions, however, the hand requires as much extra development in breadth, as reduction in length and thickness; and mark how this is given to the so-called embryo or rudimental fore-limb: it is gained by the addition of ten, twenty, or it may be even a hundred digital rays, beyond the number to which the fingers are restricted, in the hand of the higher classes of Vertebrata. We find, moreover, as numerous and striking modifications of the pectoral fins, in adjustment to the peculiar habits of the species in Fishes, as we do in the fore limbs in any of the higher classes. This fin may wield a formidable and special weapon of offence, as in many Siluroid fishes. But the modified hands have a more constant secondary office, that of touch, and are applied to ascertain the nature of surrounding objects, and particularly the character of the bottom of the water in which the fish may live. You may witness the tactile action of the pectoral fins when gold fish are transferred to a strange vessel: their eyes are so placed as to prevent their seeing what is below them; so they compress their air-bladder, and allow themselves to sink near the bottom, which they sweep, as it were, by rapid and delicate vibrations of the pectoral fins, apparently ascertaining that no sharp stone or stick projects upwards, which might injure them in their rapid movements round their ar-

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Perch	8	9	765½	28,323
Pike	53	4	5,100½	49,304
Roach	10	6½	361	81,586
Smelt	2	0	149½	38,278
Sole	14	8	542½	100,362
Tench	40	0	- -	383,252
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To which he adds, "The Salmon is far more productive than any of these; the ovarium of one female salmon will produce 20,000,000 eggs.

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encumber a creature, always float
medium of nearly the same specifi
as itself, with hind limbs? They
of no use; nay, to creatures that
attain their prey, or escape their e
vigorous alternate strokes of the
of the trunk, the attachment there
flexible limbs would be a grievous h
a very monstrosity. So, therefore,
the All-wise Creator has restricte
velopment and connections of the hi
of Fishes to the dimensions and to
which, whilst suited to the limited
they are capable of in this class, w
vent their interfering with the
more important parts of the locom
chinery."

"The following short account
experiments upon fish, made for the
of ascertaining the use of their fin
(says Mr. Owen) in the words of th
describer, PALEY, to whom Com
Physiology owes many beautiful
to its teleological applications. 'In
beside the great fin—the tail, we
pairs of fins upon the sides, two s
upon the back, and one upon t
or rather between the belly and
The balancing use of these organs
in this manner. Of the large-head
you cut off the pectoral fins, that is,
which lies close behind the gills,
falls prone to the bottom; if the r
toral fin only be cut off, the fish
that side; if the ventral fin on the
be cut away, then it loses its equ
entirely; if the dorsal and anal fi
off, the fish reels to the right and le
the fish dies, that is, when the fins
play, the belly turns upwards. T
the same parts for motion is seen in
lowing observation upon them w
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is an article of considerable interest, entitled "Notes on the Nidification of Fishes," by R. Q. Couch, Esq., from which the following passages are extracted :

"We have been accustomed to look on the inhabitants of the deep as devoid of any thing like intelligence or affection; as beings guided solely by insatiable appetites, which lead them indiscriminately to prey on each other, and to abandon their offspring to the mercy of the sea and their predatory companions, from the instant that the ova are shed. Any attempt to dispel this opinion will probably be received with distrust; for, taken as a whole, fish are certainly the most universally predaceous of any class of animals in existence; being checked only by want of power. But notwithstanding this, some, at least, have a redeeming quality, and show a remarkable care and anxiety for their young. Nests are built in which the ova are deposited, and over which the adult fish will watch till the young make their escape. And where circumstances will not allow of this continued care, as from the reflux of the sea, the old fish will return with the return of the tide, and remain as long as the water will permit.

"During the summers of 1842 and 1843, while searching for the naked molluscs of the county, I occasionally discovered portions of sea-weed, and the common coralline (*C. officinalis*), hanging from the rocks in pear-shaped masses, variously intermingled with each other. On one occasion, having observed that the mass was very curiously bound together by a slender silky-looking thread, it was torn open, and the centre was found to be occupied by a mass of transparent amber-coloured ova, each being about the tenth of an inch in diameter. Though examined on the spot with a lens, nothing could be discovered to indicate their character. They were, however, kept in a

young, any further than by observi
they were the subject of observati
they became excluded from the egg, a
they belonged to the fifteen-spined
back (*Gasterosteus Spinachia*). Be
these nests are formed in pools, s
consequently always in water; oth
frequently to be found between tide
in situations where they hang dry for
hours during the day; but whether
water, or liable to hang dry, they are
carefully watched by the adult anim
one occasion I repeatedly visited on
day for three weeks, and invariably
it guarded. The old fish would esc
on all sides, and then retire for a shor
but soon return to renew the exami
On several occasions I laid the eggs b
removing a portion of the nest; bu
this was discovered, great exertion
instantly made to recover them.
mouth of the fish the edges of the
were again drawn together, and other
torn from their attachments, and
over the orifice till the ova were ag
from view. And as great force was
times necessary to effect this, the fish
force its snout into the nest so far
eyes, and then jerk backwards till th
was effected. While thus engaged, it
suffer itself to be taken in the hand,
pelled any attack made on the ne
quitted not its post so long as I rem
And to those nests that were left
tween tide-marks, the guarding fish
returned with the returning tide,
they quit the post to any great distan
again carried away by the recedin
* * * But fish vary a great deal
modes of what may be called their
tion, as much as any other class of a
Thus, some of the sharks produce thei
alive, and in a state quite ready for
life; while others, with the rays, depo

however, from time to time, new ...ms teach us the justice of some of ...tions, even of those which seem the ...ardous. He says, for example, that ...ed *Phycis* makes a nest like birds. ...ng time the thing was treated as a ...owever, very recently, M. Olivi dis... that a fish named the Goby (*Gobius* ...s similar habits. The male, in the ...f love, makes a hole in the sand, ...s it with fucus, making a true nest, ...ch his mate waits, and he never ...s post till the eggs which have been ...d in it are hatched." [The most ex...ensive work on Fishes is by Cuvier ...ncienne, while in this country the ...f Sir John Richardson, and Messrs. ...nd Lowe, are well worthy of study.]

...INGO. (*Phœnicopterus.*) This is ...e most remarkable of all the aquatic ...: its size, beauty, and, as some say, ...the delicacy of its flesh. The body of ...ingo is smaller than that of the ...ut, owing to the great length of the ...legs, it stands nearly five feet high; ...ures six feet from the point of the ...the tip of the claws. The head is ...d round, and furnished with a bill ...ven inches long, which is higher ...wide, light and hollow, having a ...e at the base, and suddenly curved ...ls from the middle. The long legs ...e of this bird are extremely slender ...ate, as is also the neck. The plu...ut less remarkable than its figure, ...a bright scarlet. The young differ ...om the adult, changing their plu...uently, and which does not become ...ured till the third year. Flamin...bit the warm climates of Asia, ...d America; they live and migrate ...ocks, frequenting desert sea-coasts ...marshes. They are extremely shy down, and applicable to all purposes for which those of the swan are employed. When taken young, they soon grow familiar; but they are not found to thrive in the domesticated state, as they are extremely impatient of cold, and apt to decline from the want of their natural food. They are caught by snares, or by making use of tame ones. There are two species: 1. *Phœnicopterus antiquorum;* which is of a rose colour, with red wings, the quills being black: these inhabit the warm regions of the old continent, migrating in summer to southern, and sometimes to central Europe: these beautiful birds were much esteemed by the Romans, who often used them in their grand sacrifices and sumptuous entertainments; and such of the luxurious emperors as wished to indulge in the very excess of epicurism, were wont to gratify their guests with a dish of Flamingos' tongues! 2. *Phœnicopterus ruber;* deep red; with black quills; which are peculiar to tropical America, migrating in the summer to the southern, but rarely to the middle states.

Some interesting particulars of this species are given by Mr. Gosse's correspondent, Mr. Hill, who observes that when he visited the island of Cuba he had excellent oportunities of noticing their habits — that he was much among the marshes and swamps where the floods of the river and the sea form lakelets, and successively deposit their stores of living atoms, with the rising and falling tides. "Here the Flamingos flock and feed. They arrange themselves in *what seem to be lines,* in consequence of their finding their food along the *edges* of these shallows; and though it is true that whilst their heads are down, and they are cluttering with their bills in the water, they have one of their number on the watch, standing erect, with his long neck turning round to every point, ready to sound the alarm on the apprehension of danger, —

taken out of the water, and have ... to rapid decomposition: ... trout, and herrings are ... contrary, those ... bottom of the wat... respiration, a ... tability, and ... sustain ... the ...

...surprising leaps. Whe... microscope it will be obs... all head, large eyes, and ...; it has two short hairy a... ed of five joints; and at a s... neath these is the probosc... trong, sharp-pointed, tubular, between a pair of jointed guard... Its suit of sable armour appears ... jointed, and beset with a multit... spines. Its legs are six in n... joints of which are so adapted ... fold them up one within ano... leaping they all spring out wit... force. [See CHEGOE.]

FLITTERMOUSE. [See Ba...

FLOUNDER. (*Pleuronectes ...*) well-known flat-fish, very sim... Plaice, but generally smaller ... obscure colours; the upper sid... dull brown, and the under of t... the body is covered with very ... and along the back runs a row o... spines: the tail is slightly ro... Flounder is an inhabitant of t... Baltic, and Mediterranean sea... very common about our own c... even frequents our rivers at a ... from the salt water. Thoug... some others of the genus, its fl... siderable esteem.

FLOUNDER.—(PLEURONECTES ...

The ARGUS FLOUNDER (*Pleu... gus*) is a very elegant species, ... American seas, and of the s... form with the Turbot. It is of... white colour on the upper side ... numerous eye-shaped spots, ... bright blue circles with yellow ... whole skin is also marked both ... and fins with small blue and b... and is covered with small scale... side is of a whitish or pale gra... lateral line is arched over the ... and is thence continued straigh... which is rounded at the tip.

FLUSTRA. A genus of Cor... at the bottom of the sea on c... some parts being covered with t... with more especially on hard ... few fathoms water. Their g... is derived from the Saxon ... weave: hence they are famil... *sea-mats*. They consist ... branches, sometimes forming le... with numerous cells, united in ... a honeycomb. The aperture o... formed by a semicircular lid, ... ternally and concave internally

FLEA. (*Pulex irritans.*) The common Flea, a troublesome insect of the order *Aphaniptera*, is well known in every quarter of the globe for its agility, its caution, and its invincible pertinacity in feasting on the blood of man and various animals. Like the major part of the Insect race of other tribes, the Flea is produced from an egg, in the form of a minute worm or larva, which changes to a chrysalis, in order to give birth to the perfect animal. The female drops her eggs, at distant intervals, in any favourable situation: they are very small, of an oval shape, of a white colour, and a polished surface. From these, in the space of six days, are hatched the larvæ, which are destitute of feet, of a lengthened, worm-like shape, beset with distant hairs; the head furnished with a pair of short antennæ, and the tail with a pair of slightly curved forks or holders: their colour is white, with a reddish cast, and their motions quick and tortuous. In the course of ten or twelve days they attain their full growth, and are then nearly a quarter of an inch long: at this period they cease to feed, and, casting their skin, change to an oval-shaped chrysalis, exhibiting the immature limbs of the included insect, which in twelve days emerges in its perfect form: in winter, however, the time required for this evolution is considerably more. It now begins to exert its lively motions, and employs its sharp proboscis in obtaining nourishment from the juices of the first bird or quadruped to which it can gain access. Nothing can exceed the polished elegance of the shelly armour with *which the Flea* is covered, or the elasticity

bout to advance
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most plant-like
ance in the least

—(PLUMOSA PUTEARIA.)

the plants with which
form, nor is there any
Chætra in the most ana-
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white sea-weeds." In
ea's admirable "History
ea," we read as follows:
ia, we read as follows:
ticulates a pleasant scent,
mares to that of the orange,
of violets, and which a
tills to him like a mixture
roses and geranium. On
r. Patterson tells me that
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at all."

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ong, with a short blunt spine
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forming a gauze-like incrus-
frond of the sea-weed, spread-
ly to the extent of several
n general thin and closely
n sometimes becoming thickish,
pable of being detached in con-
rvilous; cells very obvious to the
e spine at each angle. In many
parts are some anomalous pro-
arter of an inch in height, scat-
the surface; they arise from
ll cells, are simple, horny, and
ll closed at top. When the poly-
d protruded, they form a beautiful
their delicacy, from their
by the microscope, from their
position, and the regularity of
some expanding the vivacity of their
beautiful campanulate figure, now
ing the circle, and ever and anon
within the shelter of their cells.
ucula are numerous, filiform, white,
a single series. The Rev. David
orough has seen a specimen (and I
ves its equal, Dr. J. remarks) of *F.*
measures five feet in length by eight
inches in breadth. "As every little cell had been inhabited by a living polype, by counting the cells on a square inch, I calculated that this web of silvery lace had been the work and the habitation of above two millions of industrious, and, we doubt not, happy inmates; so that this single colony on a submarine island was about equal in number to the population of Scotland."

FLY. A name of very general application to insects furnished with wings; but properly restricted to the numerous genus *Musca*. The strong resemblance which exists among all the species of the Fly tribe, together with their small size, makes it difficult to discriminate them readily; but the general and most obvious character of Flies, by which they are distinguished from other winged insects, is in their having transparent and naked wings, totally free from the farina or dust visible on those of butterflies, and in having no cases or covers for them. Thus, by this simple character, they are clearly distinguished from the butterfly, the beetle, the grasshopper, &c. The principal parts or members of which Flies are composed are the head, the thorax, the body, and the wings; from the number of the latter the most obvious distinction for a systematic arrangement of them is drawn. [See MUSCIDÆ.]

FLYCATCHERS. (*Muscicapidæ*.) This very numerous family, which receives its popular name from the expertness of the individuals composing it in catching the flying insects upon which they feed, is found widely diffused throughout both the eastern and western continents; and includes many of the most beautiful of the feathered tribes. The general habits of the Flycatchers are those of the shrikes, and, according to their size, they prey on small birds or insects. They have the beak horizontally depressed and armed with bristles at its base, with the point more or less decurved and emarginated. Those which are called "Tyrant Flycatchers" (*Tyrannus*) are American birds, of a large size and very spirited; they have a long, straight, and very stout bill; the ridge of the upper mandible straight and blunt, its point abruptly hooked: while the species which inhabit Europe, and come under the denomination of "Restricted Flycatchers" (*Muscicapa*), have shorter bristles at the gape, and the bill much more slender, though still depressed, with an acute edge above, and the point a little curved downward. There are, however, only two small species which inhabit this country.

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they trod and stirred the mashed biscuits, and junked fish, with which we fed them; and plied their long lithe necks, scooping with their heads reversed, and bent inwardly towards their trampling feet. The bill being crooked, and flattened for accommodation to this reversed mode of feeding, when the head is thrust down into the mud-shoals and the sand drifts, the upper bill alone touches the ground. The structure of the tongue, of which Professor Owen has given so minute and interesting a description, is admirably adapted for a mode of feeding altogether peculiar. The spines with which the upper surface is armed, are arranged in an irregular and alternate series, and act with the notches on the edge of the upper mandible, on which they press when the bird feeds with the head reversed. In this reversed position, the weight and size of the tongue becomes a very efficient instrument for entrapping the food. The bird muddles, and clutters the bill, and dabbles about, and the tongue receives and holds as a strainer whatever the water offers of food. There is nothing of the Heron character in the Flamingo. Extraordinary length of neck and legs is common to both, but a firm erect posture is its ordinary standing attitude. The neck is never curved inward and outward, convex and concave, like a Crane's, but its movements are in long sweeping curves, which are peculiarly pleasing, when the bird is preening its plumage."

FLEA. (*Pulex irritans.*) The common Flea, a troublesome insect of the order *Aphaniptera*, is well known in every quarter of the globe for its agility, its caution, and its invincible pertinacity in feasting on the blood of man and various animals. Like the major part of the Insect race of other tribes, the Flea is produced from an egg, in the form of a minute worm or larva, which changes to a chrysalis, in order to give birth to the perfect animal. The female drops her eggs, at distant intervals, in any favourable situation: they are very small, of an oval shape, of a white colour, and a polished surface. From these, in the space of six days, are hatched the larvæ, which are destitute of feet, of a lengthened, worm-like shape, beset with distant hairs; the head furnished with a pair of short antennæ, and the tail with a pair of slightly curved forks or holders; their colour is white, with a reddish cast, and their motions quick and tortuous. In the course of ten or twelve days they attain their full growth, and are then nearly a quarter of an inch long: at this period they cease to feed, and, casting their skin, change to an oval-shaped chrysalis, exhibiting the immature limbs of the included insect, which in twelve days emerges in its perfect form: in winter, however, the time required for this evolution is considerably more. It now begins to exert its lively motions, and employs its sharp proboscis in obtaining nourishment from the juices of the first bird or quadruped to which it can gain access. Nothing can exceed the polished elegance of the shelly armour with which the Flea is covered, or the elasticity of its surprising leaps. When with a microscope it will be observ a small head, large eyes, and body: it has two short hairy ant posed of five joints; and at a sma beneath these is the proboscis, strong, sharp-pointed, tubular, between a pair of jointed guards Its suit of sable armour appears t jointed, and beset with a multitu spines. Its legs are six in nu joints of which are so adapted, fold them up one within anoth leaping they all spring out with force. [See CHEGOE.]

FLITTERMOUSE. [See BAT.

FLOUNDER. (*Pleuronectes*) well-known flat-fish, very simil Plaice, but generally smaller an obscure colours: the upper side dull brown, and the under of a d the body is covered with very sm and along the back runs a row of s spines: the tail is slightly roun Flounder is an inhabitant of the Baltic, and Mediterranean seas; very common about our own coa even frequents our rivers at a gre from the salt water. Though some others of the genus, its flesh siderable esteem.

FLOUNDER.—(PLEURONECTES F

The ARGUS FLOUNDER (*Pleuro gus*) is a very elegant species, na American seas, and of the sam form with the Turbot. It is of a white colour on the upper side, numerous eye-shaped spots, ea bright blue circles with yellow c whole skin is also marked both o and fins with small blue and bro and is covered with small scales side is of a whitish or pale gray c lateral line is arched over the pe and is thence continued straight which is rounded at the tip.

FLUSTRA. A genus of Coralli at the bottom of the sea on rock some parts being covered with the with more especially on hard gr few fathoms water. Their gen is derived from the Saxon F weave: hence they are familia *sea-mats*. They consist of branches, sometimes forming leav with numerous cells, united in el a honeycomb. The aperture of t formed by a semicircular lid, e ternally and concave internally,

[illegible] when the polypes is about to advance from the cell; and, it is said, the lid of the cells opens and shuts without the slightest perceptible synchronous motion of the polypi. Some species have cells on one side of the leaves only. In the most plant-like of them there is no substance in the least

[illegible].—([illegible].)

resembling that of the plants with which they agree most in form, nor is there any substance similar to theirs in the most analogous of the true vegetables; they are often, however, called "white sea-weeds." In Dr. George Johnstone's admirable "History of British Zoophytes," we read as follows: "When recent it exhales a pleasant scent, which Pallas compares to that of the orange, Dr. Green to that of violets, and which a dried tells me smells to him like a mixture of the odour of roses and geraniums. On the contrary, Mr. Patterson tells me that the smell is strong, peculiar, and disagreeable. It probably varies, and is often not to be perceived at all."

From the same authentic source we derive the following information respecting another species, *Flustra membranacea*; the cells of which are oblong, with a short blunt spine at each corner. It is thus described:—"Polypidom forming a gauze-like incrustation on the frond of the sea-weed, spreading irregularly to the extent of several square inches, in general thin and closely adherent, but sometimes becoming thickish, and then capable of being detached in considerable portions; cells very obvious to the naked eye, oblong, quadrangular, with a blunt hollow spine at each angle. In many specimens there are some anomalous processes, a quarter of an inch in height, scattered over the surface; they arise from within the cells, are simple, horny, and tubular, but closed at top. When the polypes are all protruded, they form a beautiful object under the microscope, from their numbers, their delicacy, the regularity of their disposition, and the vivacity of their motions, now expanding their tentacula into a beautiful campanulate figure, now contracting the circle, and ever and anon retreating within the shelter of their cells. The tentacula are numerous, filiform, white, and in a single series. The Rev. David Landsborough has seen a specimen (and I have seen its equal, Dr. J. remarks) of *F. membranacea five feet in length by eight* inches in breadth. "As every little cell had been inhabited by a living polype, by counting the cells on a square inch, I calculated that this web of silvery lace had been the work and the habitation of above two millions of industrious, and, we doubt not, happy inmates; so that this single colony on a submarine island was about equal in number to the population of Scotland."

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dark brown; the wing coverts, secondary quills, and scapulars, also dark brown, edged with dingy white; under parts very pale ash, tinged with rufous on the sides and breast, the latter being marked with

SPOTTED FLYCATCHER.
(MUSCICAPA GRISOLA.)

streaks of brown: the legs are short, and darkish. Of all our summer birds the Flycatcher is the most mute. It visits this island in the spring, and disappears in September. The female builds her nest commonly in gardens, on any projecting stone in a wall, or on the end of a beam, screened by the leaves of a vine, sweet-briar, or woodbine, and sometimes close to the post of a door, where people are going in and out all day long. The nest is rather carelessly made of moss and dried grass, mixed in the inside with some wool and a few hairs. She lays four or five eggs, of a dull white, closely spotted and blotched with rusty red. This bird feeds on insects, for which it sits watching on a branch or a post, suddenly dropping down upon them, and catching them on the wing, and immediately rising, returns again to its station to wait for more. After the young have quitted the nest, the parent birds follow them from tree to tree, and watch them with the most sedulous attention. They feed them with the flies which flutter among the boughs beneath; or, pursuing their insect prey with a quick irregular kind of flight, like that of a butterfly, to a greater distance, they immediately return as before described.

Mr. Knapp says, "We have perhaps no bird more attached to peculiar situations than the Grey Flycatcher (*Muscicapa grisola*); one pair, or their descendants, frequenting year after year the same hole in the wall, or the same branch on the vine or the plum. I once knew a pair of these birds bring off two broods in one season from the same nest. This Flycatcher delights in eminences. The naked spray of a tree, or projecting stone in a building, or even a tall stick in the very middle of the grass-plot, is sure to attract its attention, as affording an uninterrupted view of its winged prey; and from this it will be in constant activity a whole summer's day, capturing its food, and returning to swallow it."

The Pied FLYCATCHER. (*Muscicapa luctuosa.*) This species is found in Sweden, Russia, and sometimes in this c
distribution here, however, being
fined to "the lakes" in the north
The beak is black; the forehead w
of the head, and all the upper pa
the lesser wing-coverts and t
coverts of the primaries are dusk
six quills are wholly dusky, the
at the base: the under parts of t
white; the tail is dusky black; a
are black. There is, however, c
great variety in their markings.
wild and uncultivated tracts of
open heaths; and constructs its
hole of a tree. The female lay
pale blue eggs.

The RED-EYED FLYCATCHER
cinerea olivacea.) This species
of the southern provinces of Nor
and is also found in many of
India islands, particularly Jam
it is called *Whip-Tom-Kelly*, fro
resemblance of its note to those w
head, neck, and back are olive
wing-coverts and quills are
green, as is also the tail; the fe
brown above and greyish beneath
beak passing over the eyes and
on the hind head is a reddish
the under parts of the body are
irregularly spotted with pale ye
and feet brown.

Mr. Gosse, in describing this sp
"Birds of Jamaica," says he c
understand how the call can
Whip-Tom-Kelly, as the accen
energetically on the last sylla
familiar name which he gives to
to-whit; and says that sounds
semblating those words are utter
bird with incessant iteration
ing energy from every grove,
from every tree. Its food, he
both animal and vegetable;
stomach he has found seeds of
birch, and the berries of sweet-
has also observed it jumping o
umbrageous retreat after stations
as vagrant, prey. "Incubation
in June and July. The nest is n
structure, though made of coars
It is a deep cup, about as large
nary tea-cup, narrowed at the m
posed of dried grass, intermixed
cotton, and, sparingly, with
spiders' nests, and lined with hair
It is usually suspended between
or in the fork of one, the margin
woven, so as to embrace the twig
very neatly performed. Speci
much in beauty. The eggs, com
in number, are delicately white,
small red-brown spots thinly sca
the surface, sometimes very n
few."

The CAYENNE FLYCATCHER.
Cayanensis.) A beautiful spe
seven inches in length, which inh
ennie and St. Domingo. The cr
head is a brown yellow; and fro
which is dusky, to the hind part o
is a white streak; all the upper p

feathers lighter on their
-coverts and the upper
rown, their edges rufous;
nd the rest of the under
quills and tail brown.

TCHER. (*Muscipeta Pa-*
bird, measuring upwards
ng, owing to its dispro-
ich is generally about
head, hind part of the
are greenish black; the
ther are very long, and
ck, rump, wing-coverts,
are white; the greater
lack, fringed with white;
neck, and all the under
pure white; tail cunei-
ered. This bird is found
s of Africa, frequenting
, where its insect food is

FLYCATCHER. (*Musci-*
is bird, whose distinctive
d from its forked tail, is
, of which the tail forms
r of the beak is black;
are light grey, slightly
under parts of the body
wing red; the wing-
and the quills black,
inhabits Mexico. [See
URA: ONYCHORHYNCUS.]

(*Exocetus.*) By the
h and size of their pec-
of this genus are enabled
lly from the water, and
emporary flight through
r name. It is evident,
"flights" are chiefly per-
ose of escaping from the
, and other predaceous
nstantly pursuing them.
mirably graphic "Natu-
amaica," has shown that
change their flight. The
annot, therefore, be en-
"I have never," observes
author of 'Wanderings
s,' "been able to see any

EXOCETUS VOLITANS.)

ectoral fins during flight,
gth of time I have seen
the fin has been thirty
atch, and their longest
Captain Hall has been
thinks that subsequent
tended the space. The
of flight, as seen above
ater, is from two to three

feet; but I have known them come on board at a height of fourteen feet and upwards; and they have been well ascertained to come into channels of a line-of-battle ship, which is considered as high as twenty feet and upwards. But it must not be supposed they have the power of elevating themselves in the air after having left their native element; for, on watching them, I have often seen them fall much below the elevation at which they first rose from the water, but never in any one instance could I observe them rise from the height at which they first sprang; for I regard the elevation they first take to depend on the power of the first spring or leap they make on leaving their native element."

In tropical seas the Flying-fish rise from water in flocks, or, more properly, shoals, of hundreds at a time, when disturbed by the passing of a ship, or pursued by their inveterate foe, the dolphin. They spring from the crest of a wave, and, darting forward, plunge into another, to wet the membrane of the fins, and in this manner continue their flights for several hundred yards, often pursued by marine birds in the element to which they are driven for protection against the tyrants of their own.—Gardner, in his 'Travels in Brazil,' confirms Humboldt's assertion, (denied by Cuvier,) that the Flying-fish uses its pectoral fins as wings during the time it remains above water.

The distinguishing characters of the genus are—pectoral fins nearly equal to the body in length; head flattened above and on the sides; the lower part of the body furnished with a longitudinal series of carinated scales on each side; dorsal fin placed above the anal: eyes large; jaws furnished with small pointed teeth. There are but very few of the genus.

The MEDITERRANEAN FLYING-FISH (*Exocetus exiliens*) runs from ten to fifteen inches in length, its general shape resembling that of a herring: the head is rather large, and sloping pretty suddenly in front; the eyes large, and of a silver colour, with a cast of gold; the scales are large, thin, and rounded; and the whole fish is of a bright silvery cast, with a blue or dusky tinge on the upper part. The pectoral fins are of a sharply lanceolate form, and extend as far as the beginning of the tail; the dorsal and anal fins are shallow, and placed opposite each other near the tail, which is deeply forked with sharp-pointed lobes, the lower being nearly twice the length of the upper; the ventral fins, which are rather large and long, are situated behind the middle of the body.

OCEANIC FLYING-FISH. (*Exocetus volitans.*) This species is somewhat more slender, and the head less sloping than the preceding, though from its general resemblance it might be easily mistaken for it; but the principal difference arises from the ventral fins being seated near the pectoral ones, and from their being much smaller and of a slightly lunated form. This species is of a bright silver colour, gradually deepening into purplish brown on the back, the dorsal and *anal yellowish*, and the ventral fins and

tail reddish. It is a native of the Indian and American seas; but it is also sometimes found in the Mediterranean, and some solitary instances occur of its having been seen about our own coasts. In the Gulf of Mexico are found some species with curious appendages or filaments attached to the lower jaw. The air-bladder in this, and doubtless in the rest of the genus, is very large.

FLYING SQUIRREL. (*Pteromys.*) A genus of rodent mammalia, distinguished from the common Squirrels by the extension of the skin of the flank between the fore and hind legs, which gives them the power of supporting themselves a short time in the air, and of making immense leaps. The feet have long bony appendages, which help to support this lateral membrane. To this genus belongs the common Flying Squirrel (*Pteromys volans*), which is chiefly found in the most northern regions, and abounds in the birch and pine woods of Siberia in particular. Its colour on the upper parts is a pale grey, and on the under parts milk-white. It measures about six inches and a quarter in length, from the nose to the tail, the latter being shorter than the body, thickly furred, of a slightly flattened form, and rounded at the extremity. Its manner of flight, or rather springing, is performed by means of an expansile furry membrane, reaching from the fore feet to the hind; and in order the better to manage this part, the thumb of the fore feet is stretched out to a considerable length within the membrane, so as to appear in the skeleton like a long bony process on each side of the fore feet. The Flying Squirrel generally resides in the hollows of trees towards the upper part; preparing its nest of the finer mosses. It is a solitary animal, and is only seen in pairs during the breeding season. It rarely makes its appearance by day, emerging only at the commencement of twilight, when it may be seen climbing about the trees, and darting with great velocity from one to the other. It feeds on the young buds and catkins of the birch and pine, &c.; and in the winter it leaves its nest only in mild weather, but does not become torpid during that season. This animal readily springs, or, as it were, swiftly sails, to the distance of twenty fathoms or more, and thus passes from one tree to another, always directing its flight obliquely downwards. It very rarely descends to the surface, and, when taken and placed on the ground, runs or springs somewhat awkwardly, with its tail elevated, beginning to climb with great activity as soon as it reaches a tree. If thrown from a height, it immediately spreads its membranes, and, balancing itself, endeavours to direct its motion by the assistance of the tail. The young are produced early in May, and are from two to four in number: they are at first blind, and nearly void of hair; and the parent fosters them by covering them with her flying-membrane. In their manner of sitting and feeding, as well as in the action of washing their face with their paws, &c., the Flying Squirrel resembles the common *species*.

The Virginian Flying Squirrel. (*Pteromys volucella.*) This species differs from the preceding both in size and colour. Its general length is five inches to the tail, which measures about four inches; the colour is a subferruginous brown above, and yellowish

VIRGINIAN FLYING SQUIRREL. (PTEROMYS VOLUCELLA.)

white beneath; and the edges of the flying membrane are of a darker tinge than the rest of the fur, contrasting with the white border of the under part. The tail is of a similar colour to the body, with the hair spreading towards each side, and the extremity somewhat sharpened. The eyes are large, and the ears rather short, almost naked, and slightly rounded. It is a native of the temperate parts of North America, and, being a beautiful little animal and readily tamed, is frequently kept in a state of captivity: it feeds on various fruits, nuts, almonds, &c., and shows a considerable degree of attachment to its possessor. It is naturally a gregarious disposition, and may be seen flying, to the number of ten or twelve together, from tree to tree. Like the former species, it is chiefly nocturnal in its habits: it prepares its nest in the hollows of trees with moss, leaves, &c.; several often inhabiting the same retreat. They are capable of swimming, in case of necessity, in the manner of other quadrupeds, and, after leaving the water, can exert their power of flight as before.

FOOTMAN [MOTHS]. A name given by collectors to different species of Moths of the genera *Eulepia* and *Lithosia*.

FORAMENIFERA. A term given by some conchologists to denote a class of minute many-chambered internal shells, which have an open chamber beyond the last partition.

FORFICULA. [See Earwig.]

FORMICA. [See Ant.]

FORMICIDÆ. A family of Hymenopterous insects, composed of the well-known and highly interesting tribes of *Ants*; but not including the still more singular *Termites*, or White Ants, (with which they must not be confounded). Both are full of interest, and worthy of the most careful investigation; and to each we have accordingly devoted no inconsiderable space. [See Ant, Driver-ant.]

NE. (*Viverra fœtida.*) An animal
nnel tribe, nearly allied to the
hich it greatly resembles: its
owever, are somewhat bolder, and
f spots along the sides more regu-
ed: the under part of the body
ary white; and the tail is annu-
black and white. This animal is
possessed of considerable fierce-
ying poultry, &c., in the manner
mmon weasel. It is a native of
ar, Guinea, Cochin-China, &c.

RER. An extensive group of
rous insects, forming a subsection
ceeds. They are solitary in their
ad most of the species are organized
ating cells in earth or wood, in
y bury other insects in a wounded
r state, and at the same time de-
r eggs; so that the larvæ, when
find a store of food prepared for
esence. The basal joint of the
tarsi not being enlarged, the legs
ted for carrying pollen, neither is
clothed with hairs, requisite for
ort. Some species, the structure of
is not adapted for burrowing, are
and, like the cuckoo among birds,
eggs in the nests of other species,
expense the young are reared.
grown, these larvæ spin a cocoon,
they pass the pupa state. The
nets are generally very active, and
e nectar of flowers, especially those
bellifers. The work of Mr. W. E.
on the British Fossorial Hymen-
very highly esteemed by Entomo-
d we recommend it to those de-
studying the British species, often
with such wonderfully interesting

. This term, when taken in a
nse, is of similar import with
t. In a limited view, it more pe-
signifies the larger kind of birds,
and domestic, which are either
pursued for the purposes of food.
ten, Fowl includes all the denizens
ultry yard, with pheasants, par-
and all other kinds of winged game.

(*Canis vulpes.*) Of all beasts of
Fox is considered to be the most
l, sagacious, whether in obtaining
eluding pursuit. They appear to
generally diffused throughout all
rm and temperate parts of the

FOX. —(CANIS VULPES.)

arying with numerous varieties,
r and fine, in most parts of Europe,
of Asia, and America. The Fox
d head, a sharp snout, a *flat fore-*
head, obliquely seated eyes, sharp erect ears, an elongated body well covered with hair, proportionally short limbs, and a straight bushy tail, so long that when pendent it touches the ground. The general colour is a yellow-brown; and on the forehead, shoulders, hind part of the back, as far as the beginning of the tail, and outside of the hind legs, it is a little mixed with white or ash-colour: the lips, cheek, and throat are white, and a white stripe runs along the under side of the legs; the tips of the ears and the feet are black: the tail a reddish-yellow, mixed with a blackish tinge, and internally brownish yellow-white, with a blackish cast; the tip milk white.

The Fox varies considerably in size, but in general measures about three feet six inches from the snout to the end of the tail, of which the latter is sixteen inches; and the height at the shoulders is about fourteen inches. "The general expression of its features," as Mr. Bell remarks, "the obliquity and quickness of the eye, the sharp shrewd-looking muzzle, and the erect ears, afford the most unequivocal indications of that mingled acuteness and fraud which have long rendered it a by-word and a proverb; for it is well-known that this character of its physiognomy is not falsified by the animal's real propensities and habits."

The Fox prepares for himself a convenient den in which he lies concealed during the greater part of the day: this he sometimes obtains by dispossessing the badger of his hole; at other times by forming his own burrow; but it is always so contrived as to afford the best security to the occupant, by being situated under hard ground, the roots of trees, &c., and is furnished with proper outlets through which he may escape when hard pressed by his hunters. Prudent, patient, and vigilant, he waits the opportunity of depredation, and varies his conduct on every occasion. His domicile is generally at the edge of a wood, and yet within a convenient distance of some farm-house: from thence he listens to the crowing of the cock, and the cackling of the domestic fowls, then, concealing his approaches, he creeps stealthily along, attacks his prey, and seldom returns without his booty. Poultry, pheasants, partridges, small birds, leverets, and rabbits are his favourite objects: but he is also fond of certain berries and fruits, and can occasionally make a meal of field-mice, frogs, newts, &c. The Fox seems to be wholly devoid of that instinct of gratitude which characterizes the Dog, and is even found in the Wolf and Jackal; nay, whatever kindness may be shown him when in a state of confinement, he is still sly, timid, and suspicious; insusceptible, as it would seem, of any kind of attachment. His voice is a kind of yelp, or stifled bark, and his bite is very severe and dangerous.

There is no animal that affords more diversion to the huntsman, or that gives him more occupation, than the Fox. When he finds himself pursued, he usually makes for his hole, and, penetrating to the bottom, lies *quiet till a terrier* is sent in to him; but

should his den be under a rock or the roots of trees, he is safe, for the terrier is no match for him there, and he cannot be dug out. When, as is generally practised, the retreat to his den is cut off, his stratagems and shifts to escape are various. He always seeks the most woody parts of the country, and prefers such paths as are most embarrassed by thorns and briars: he runs in a direct line before the hounds, and at no great distance from them; and when overtaken, he defends himself with desperate and silent obstinacy. The fetid odour of the Fox is intolerable; his sight is keen; and he possesses astonishing acuteness of smell. The time of gestation is about sixty-three days; and while the female is suckling her young, nothing can exceed her courage and boldness. The Fox, unmolested, will live twelve or fourteen years. In the first year he is called a *cub;* the second, a *Fox;* and the third, an *old Fox:* he is eighteen months, or nearly two years old, before he arrives at full maturity. The skin makes a warm and soft fur, and is therefore used for muffs, linings, &c.

ARCTIC FOX. (*Canis lagopus.*) This species is smaller than the common Fox, with a sharp nose, and short rounded ears, almost hid in its fur; the legs are short, and the toes are covered both above and below with a very thick soft fur; the tail is shorter than that of the common Fox, but more bushy. It inhabits the countries bordering on the Frozen Ocean in both continents. At the approach of winter their coat of hair becomes thick and ragged; till at length it grows perfectly white, changing colour last on the ridge of the back and tip of the tail.

ARCTIC FOX.—(CANIS [VULPES] LAGOPUS.)

This species preys upon various small quadrupeds, such as hares, marmots, &c., as well as upon all kinds of water-fowl and their eggs; also, when necessity urges, on the carcasses of fish left on shore, shell-fish, or whatsoever the sea throws up. Mr. Pennant says, that in Spitzbergen and Greenland, where the ground is eternally frozen, they live in the clefts of rocks, two or three inhabiting the same hole. They swim well, and often cross from island to island in *search of prey.* They are tame and inoffensive *animals;* and are killed for the sake of *their skins,* both in Asia and Hudson's Bay; but though the fur is light and warm, it is not durable. The Greenlanders take them either in pitfalls dug in the snow, and baited with fish; or in springs made with whalebone laid over a hole made in the snow, strewed over at bottom with fish; or in traps similarly baited. The arctic travellers and voyagers, Dr. Sir John Richardson, Captains Parry, Franklin, Ross, Lyon, Back, and Simpson, refer much in their narratives to this inhabitant of snow-covered countries; and those familiar with their writings cannot but sympathize with their *regard* for the limited number of animals and plants which they met with in these dreary wastes. One of the most active, and certainly one of the prettiest, was the White Arctic Fox described above.

ANTARCTIC FOX. (*Canis Antarcticus.*) This species is found in the Falkland Isles, near the extremity of South America, and is about one-third larger than the Arctic Fox: has much the appearance of the wolf in its ears, tail, and the strength of its limbs; whence the French call it *Loup-renard,* or the Wolf-fox. The head and body are of a cinereous brown hue, the hair being more woolly than that of the common Fox; the legs are dashed with *rust-colour;* the tail dusky, more bushy, and shorter than that of the common Fox, and tipped with white. It resides near the shores, kennels like the rest of its kind, and forms regular paths from one bay to another, probably for the convenience of surprising water-fowl, on which it principally subsists. It is a tame, fetid animal, and barks like a dog.

BLACK OR SILVERY FOX. (*Canis argentatus.*) This species inhabits the northern parts of Asia, Europe, and America, and is only distinguishable from the common Fox

SILVERY FOX.—(CANIS ARGENTATUS.)

by its copious and beautiful fur, which, particularly in the Asiatic one, is of a rich and shining black or deep brown colour, with the longer or exterior hairs of a silvery white, giving a highly elegant appearance to the animal, and rendering its fur more valuable than that of almost any other quadruped.

RED FOX. (*Canis fulvus.*) This species is found throughout North America; its general colour is bright ferruginous on the head, back, and sides; beneath the chin it is white, whilst the throat and neck are of a dark grey; the under parts of the body towards the tail are a very pale red. The skins are much sought for, and employed in various manufactures.

...ED FOX. (*Canis decussatus.*) The ...r of this animal's fur is a sort of gray, ...ing from the mixture of black and ... hair. He has a black cross on his ...ders, from which he derives his name. ...muzzle, lower parts of the body, and ...et are black; the end of the tail is ... It inhabits the northern parts of ...ica; and it has been suggested as pro... that it is only a variety of the Black

...SAC FOX. (*Canis Corsac.*) This ...al, which inhabits the vast plains of ...ry, is, in summer, of a clear yellow-...gineous colour: in winter, mixed or ...d with grey, deeper on the back, white ...e belly, and reddish on the feet; the ...re surrounded with a border of white; ... brownish stripe runs from them down ...se; the ears are short; the tail almost ...g as the body, both the base and tip ... blackish. It commits great ravages ...g the game; is hunted with falcons ...ngs; and it is said that not less than ...ar fifty thousand are annually taken, ...o the Russians, and a vast number of ...sent into Turkey.

...FT FOX. (*Canis velox.*) This bean-...little animal, which is much smaller ...any other species, is distinguished by ...traordinary speed, which, it is asserted, ...ses the fleetest antelope, and seems ... to fly than touch the ground in its ... Its body is slender, and the tail ... long, cylindrical, and black: the hair ..., dense, and soft.

...X-HOUND. Among those manly and ...rating field sports for which "Old ...nd" has so long been famous, fox-...ng justly claims pre-eminence; and in ...nals of the chase numerous instances ...nd, courage, and perseverance are to ...nd which may well be ranked among ...arvellous. With this part of the sub-...owever, we have no legitimate busi-...but merely allude to it, in order to ...t for the extraordinary care and ...ion which, for centuries, have been be-...d on this peculiar breed of dogs—a ...in which are combined, in the highest ...e degree of excellence, fleetness, ...th, spirit, fine scent, perseverance, and ...llection. The Fox-hound is much ...r than the Stag-hound, his average ... being from twenty to twenty-two ...; but in all the requisites for hunting ...ncivalled. To be perfect, we are told, ...egs should be straight as arrows; his ...und and not too large; his shoulders ... his breast rather wide than narrow; ...est deep; his back broad; his head ... his neck thin; his tail thick and ... and well carried."

...NCOLIN. The birds which are thus ...ated bear so great a resemblance to ...tridge, that many naturalists include ...n the genus *Perdix*; but there are ...who say that the Francolins are dis-...ished from the Partridges by the ...ing longer and stronger; *the tail is* ...nger, &c. *In the manners of the* birds also there is a great dissimularity, the Francolins residing in damp places and perching upon trees, whereas Partridges always rest upon the ground.

The COMMON FRANCOLIN (*Francolinus vulgaris*) is upwards of twelve inches in length: the upper parts of the head, hind part of the neck, back, and wing-coverts are varied with dusky and yellowish rust-colour; the sides of the head, neck, breast, and belly are black; round the neck is a rusty orange collar; the sides of the neck, breast, and body are black, varied with spots of white; the lower part of the belly and thighs striped with black; the lower part of the back and rump crossed with alternate lines of black and yellowish white: the quills dusky, marked with transverse rusty yellow spots: tail rounded, the four middle feathers alternately striped with black and rusty yellow; the others on each side, with black and white for two-thirds of their length; the rest black to the tip: legs reddish, and furnished with a spur. This elegant species is found throughout all the warmer parts of Europe; other allied species are met with in Bengal, and are abundant in Barbary and other parts of Africa. It feeds upon insects and seeds: it has a very loud whistle; and its flesh is greatly esteemed.

The PONDICHERRY FRANCOLIN (*Francolinus Pondicerianus*) is a beautiful species. Its length, including the tail, is fourteen inches: the beak is red at the base and yellow at the tip: the top of the head is gray-brown; the forehead bright red, that colour passing over the eyes like an eyebrow, and ending on the back of the head: the breast is alternately striped with whitish-yellow and bright brown: the back, the greater and lesser wing-coverts, and the rump, gray-brown; the edges of the feathers with black spots, and all of them with three reddish-white stripes: the quills and secondaries are gray, the outer webs striped with yellowish white: the two middle tail-feathers are gray, spotted, and crossed with four yellow-white bands; the belly and abdomen are white, striped with semicircular bands: the legs are red, and armed with a strong spur. It is met with in parts of India, where it frequents gardens and cultivated lands, and is called a partridge.

The PEARLED FRANCOLIN. (*Francolinus perlatus.*) This species is common in China, and is likewise known at Bengal, the Mauritius, and Madagascar. Like the rest of the Francolins, it is a forest bird, and perches upon trees. The male of this beautiful species varies from ten to twelve inches in length: the feathers on the top of the head are black, edged with red; two longitudinal black stripes commence from the beak, and surround the eyes, leaving the space between pure white, of which colour the throat is also: the feathers on the hinder part of the neck are black, marked with four longitudinal white spots; those on the top of the back, the fore part of the neck, the breast, and the lesser wing-coverts, are black, each

varied with six rounded white spots: the scapulars are of a reddish chestnut, with whitish spots at their tips: the back, the rump, the upper wing-coverts, and those of the tail at their base, are black, with innumerable white bands; the tip of the tail-feathers is black; the belly is whitish, the sides rather red, both varied with black lines: the under tail-coverts are red; the beak is black, and the feet are bright red: the tarsi are armed with a thick and blunt spur. The female is rather smaller, and differs in several respects from the male.

FRATERCULA. A genus of web-footed birds belonging to the family *Alcadæ*, and containing the common Puffin (*F. arctica.*) [See PUFFIN: AUK.]

FRIAR-BIRD. (*Tropidorhynchus corniculatus.*) This bird is generally dispersed over New South Wales, where it is variously called by the colonists Friar-bird, Monk, and Poor Soldier. It selects the topmost dead branches of the most lofty trees whereon

FRIAR-BIRD.
(TROPIDORHYNCHUS CORNICULATUS.)

to perch and pour forth its garrulous and singular notes, and attracts attention more by its loud and singular call than by its appearance. It is called, from some of these notes, Poor Soldier, Pimlico, Four o'clock, &c.: its bare head and neck give it also the appellation of Friar-bird, Monk, and Leather-head. Its flight is undulating and powerful, and it may be seen passing from one part of the forest to another: when among the branches it can cling in every direction; sometimes it hangs by one foot, with its head downwards: if seized when wounded it can inflict with its sharp claws severe wounds on the head of the captor. It feeds on the pollen of Eucalypti, on insects, wild figs, and berries. It begins to breed in November, becoming then animated and fierce, readily attacking hawks, crows, and other birds that may venture near its nest. The nest is cup-shaped, and rather rudely constructed, being composed of the inner rind of the stringy bark and wool, to which succeeds a layer of fine twigs, lined with grasses and fibrous roots; the whole openly suspended to the horizontal branch of an apple (*Angophora*) or gum-tree, frequently within a few feet of the ground. The eggs are generally three in number. The young have merely the rudiment of a knob to the bill.—(*Gould's Birds of Australia.*)

Another species, TROPIDORHYNCHUS ARGENTICEPS, or Silvery-crowned Friar-bird, inhabits the north-west coast of Australia.

FRIGATE-BIRD. (*Tachypetes.*) This is an aquatic bird allied to the Cormorants, from which, however, it differs by having a forked tail, short feet, the membranes of which are very deeply notched, an extraordinary spread of wing (said to be ten or twelve feet in extent), and a beak both man-

FRIGATE-BIRD.—(TACHYPETES AQUILA.)

dibles of which are curved at the tip. The plumage is a richly-empurpled black, the under part of the throat more or less varied with white, and the beak red. In command of wing it is equalled by none of its class; and it is accordingly met with at an immense distance from all land, principally between the tropics, where it is seen dashing upon the flying-fish, and attacking the gannets and gulls in order to make them disgorge their prey. It has received from English sailors the names of Frigate-bird and Man-of-war bird. It breeds on trees on uninhabited islands, and lays a single spherical white egg.

Dr. Chamberlaine, in the Jamaica Almanac for 1843, thus writes of the Frigate-bird: "He is almost always a constant attendant upon our fishermen, when pursuing their vocation on the sand-banks in Kingston harbour, or near the Palisadoes. Over their heads it takes its aerial stand, and watches their motions with a patience and perseverance the most exemplary. It is upon these occasions that the Pelicans, the Gulls, and other sea-birds, become its associates and companions. These are also found watching with equal eagerness and anxiety the lines of the fishermen's progress, attracted to the spot by the sea of living objects immediately beneath them. And then it is, when these men are making their last haul, and the finny tribe are fluttering and panting for life, that this voracious bird exhibits its fierce and voracious propensities. His hungry companions have scarcely secured their prey by the side of the fishermen's canoes, when with the lightning's dart they are pounced upon with such violence, that, to escape its rapacious assaults, they readily in turn yield their hard-earned booty to its formidable opponent. The lightness of its trunk, the short tarsi, and vast spread of wing, together with its long, slender, and

, and including various minor
nsisting of several genera, more
ely related to one another. None
e of large size; and in their habits
al appearance they bear a very
llionship. They feed chiefly upon
ds of grain and seeds; occasion-
upon insects. They are for the
hardy birds, and do not quit this
uring the winter; but some few
hither at that season from more
limates. Many of the *Fringillidæ*
kable for their powers of song;
highly prized for the delicacy of
. They frequent fields, groves,
, and woodlands; while many, in
captivity, are rendered subservient
sement and gratification of man.
severally described in this work,
be found in their alphabetical
this place we shall merely give
s, as an example, which we find
e beautifully coloured specimens
ould's superb work. It is called
Temporalis, or the RED-EYEBROWED
This bird has the crown of the head
y; wings and tail olive-brown;
r the eye and rump, crimson; bill
yellowish white. Eggs five or six
r, of a beautiful fleshy white. It
n the pasture lands of New South
d South Australia, and is parti-
bundant in the neighbourhood of
In the autumn it is gregarious,
mbling in very large flocks; but
ing they are mostly seen in pairs.
ld a large nest, formed of dead
ed with thistle-down, in any low
and for a site, and in none more
y than in that beautiful plant, the
mon *squarrosum*. In the exten-
admirable work by Messrs. Gray
hell, "the Genera of Birds," the
figures of many of the *Fringillidæ*

summer, of a much brighter cast, and with more vivid variegations; but, like all other species which are in the habit of casting the skin, it differs at intervals as to the brightness or intensity of its colours. The teeth are very small; the eyes large and brilliant, and surrounded with a yellow circle; the ears are placed behind them, and covered with a membrane. Their muscles are considerable in relation to their bulk, and peculiarly elastic, strong, irritable, and sensible to the action of galvanism. The Frog is light, active, and lively; the limbs admirably calculated for the peculiar motions of the animal, and the hind feet strongly webbed, to assist its progress in the water, to which it occasionally retires during the heats of summer, and again during the frosts of winter: for at that time it lies in a torpid state, either deeply plunged in the soft mud at the bottom of stagnant waters, or in the hollows beneath their banks, till it is awakened from its slumber by the return of spring. And here it may be observed, that though the Frog and the Toad have a general similitude, their distinguishing characteristics are very marked and decided. The Frog leaps; the Toad crawls. The Frog is in general the smaller of the two, of a brighter colour, and has a more polished surface; the toad is brown, rough, and dusky. The Frog is light and nimble; the toad slow, corpulent, and heavy. In their internal conformation the difference is not remarkable, except that the Frog has more air-bladders than the toad, by which it is rendered better adapted for an aquatic life.

Some time in March the Frog usually deposits its ova or spawn, consisting of a clustered mass of gelatinous transparent eggs, in each of which is embedded the embryo, or *tadpole*, in the form of a round black globule. In this state it lies for a month or five weeks, before the tadpoles

large, black, and roundish; the latter slender, and bordered with a very broad transparent finny margin. Their motions are extremely lively, and they are often seen in such vast numbers as to blacken the whole water with their legions. When the tadpoles have arrived at the age of about five or six weeks, the hind legs make their appearance; gradually increasing in length and size; and, in about a fortnight afterwards, are succeeded by the fore legs, which are indeed formed beneath the skin much sooner, and are occasionally protruded and again retracted by the reptile through a small foramen on each side of the breast, and are not completely stretched forth till the time just mentioned. It now partakes of the form both of a frog and a lizard; which figure it retains for about six hours; and then the tail continuing to decrease, it becomes quite obliterated in the space of a day or two afterwards. The Frog, at length arrived at its perfect state, is now seen wandering about the brinks of its parent waters, and sometimes in such vast numbers in particular spots, that not only has their appearance given rise to an absurd belief among the vulgar that it occasionally "rained frogs," but various modes of accounting for so "extraordinary a phenomenon" have presented themselves to the minds of those whose duty it was to dispel the unfounded though popular credulity, by tracing its origin and properly explaining it.

The Frog, no longer of ambiguous form, now feeds on animal food; supporting itself on insects, small snails, worms, &c. It principally lives on insects, for the more readily obtaining of which the structure of its tongue is extremely well calculated; being very long, and so situated that the root is attached to the fore rather than to the hind part of the mouth; and, when at rest, lying backwards, as if the animal were swallowing the tip. By this means it is enabled to throw it some distance from the mouth, which is done with great celerity, the bifid and glutinous tip securing the prey, which is swallowed with an instantaneous motion, so quick as to be scarcely perceptible.

The muscular system of the Frog deserves particular attention. Mr. Broderip observes, "In the Anurous Batrachians, the Frogs especially, the muscles of the abdomen are more developed than in the other Reptiles: offering in this particular some analogy to the abdominal structure of the Mammalifers. But it is in the disposition of the muscles of the thigh and leg in the Frogs and other Anurous Batrachians, that the greatest singularity is manifested. These, whether taken conjointly or singly, present the greatest analogy with the muscular arrangement of the same parts in Man. We find the rounded, elongated, conical thigh, the knee extending itself in the same direction with the thighbone, and a well-fashioned calf to the leg, formed by the belly of the *gastrocnemii* muscles. It is impossible to watch the horizontal motions of a Frog in the water, as it is impelled by these muscles and its webbed feet, *without being struck* by the complete *resemblance* in this portion of its frame to human conformation, and the almost perfect identity of the movements of its lower extremities with those of a man making the same efforts in the same situation. By the aid of these well-developed lower limbs, and the prodigious power of their muscular and bony levers, a Frog can raise itself in the air to twenty times its own height, and traverse at a single bound, a space more than fifty times the length of its own body." The difference of sex in these animals is not perceptible till they have arrived at their fourth year, nor do they begin to propagate till they have reached that period. Hence, on comparing their slow growth with their other habitudes, it would seem that they live about twelve years; but so numerous are their enemies, both by land and water, that it is probable very few arrive at so great an age. The Frog is extremely tenacious of life, and will survive for a considerable space the loss of many of its organs. If confined entirely under water, it is still enabled to support its existence for several days: on the contrary it is not so well able to endure the want of water, nor long exposure to a dry air and a hot sun, though it delights to bask occasionally in a moderate sunshine: it is therefore particularly careful to secure a retreat where it may enjoy the benefit of shade and a sufficient supply of moisture. Frogs are distinguished by a peculiar cry, termed croaking, particularly during rain and hot weather, in the morning and evening.— There are several other species of Frogs, a few of which it will be necessary to describe.

The Edible Frog (*Rana esculenta*), so called from its being the kind most approved of for the table by our nearest continental neighbours,— is found plentifully in France, Italy, Germany, and many other parts of Europe, though it is rare in England. It is rather larger than the common Frog, and of an olive-green colour, distinctly and strongly marked on the upper parts of the body with black spots or patches, the limbs being transversely marked with bands of the same colour; and from the tip of the nose down the whole length of the back run three distinct yellow stripes. The under parts of the body and limbs are of a dull white, slightly tinged with green, and variegated with brown spots.

EDIBLE FROG.—(RANA ESCULENTA.)

The proportion of the limbs is nearly the same as in the common Frog, and the hind feet are very strongly palmated; but the head is rather larger and more pointed. The Edible Frog is a very voracious animal, and will occasionally seize on young birds, mice, &c., swallowing them whole, like the rest of its prey. The male of this species, during

it including the feet; with the
ed it measures about eighteen
nhabits North America, par-
southern parts of the United
has received the name of Bull-
s voice resembling the distant
bull. Its colour on the upper
usky olive, somewhat irregu-
l with numerous dark brown
nder parts being of a whitish
ith green, and thickly spotted.
have only four toes, and are
t the hind feet, which are large
e very widely webbed. The
eyes are red, surrounded with
rder of yellow: the external
f the ears are large and round,
brown colour, and surrounded
ellow or whitish margin. In
Natural History of Carolina,
at this species frequents springs
by the continual running of
small pond or hole is usually
the mouth of the spring, which
hout a pair of these Frogs, who
ed, with a long leap or two
outh of the spring, where they
He adds, that it is commonly be-
hey keep the springs clean, and
ater, and therefore the general
in their favour, although they
evourers of young ducks and
ch they often swallow whole.

s Frog (*Rana ocellata*) is also
everal parts of North America,
ist situations, as the neighbour-
gs and rivulets. In size it dif-
tle from the Bull-Frog, except
s are thicker and stouter; but
unwebbed, and are all divided
, each joint being furnished be-
a kind of tubercle or process.
a pale reddish brown, with two
arked whitish elevated lines
n the middle of the back, the
space being marked with several
e of a reddish chestnut colour,
des are beautifully ornamented

of foam, until they have completed their final transformation. When the pupa, which is of a beautiful green colour, is about to undergo its change into the complete insect, it ceases to absorb any longer the juices of the plant, and to discharge the projecting froth. It then emerges from its concealment. The winged insect is scarely larger than the larva; but its colour is brown, with a pair of broad, irregular, pale bands across the upper wings. It possesses the power of leaping in a remarkable degree; for which purpose, the tips of their hind shanks are surrounded with little spines, and the first two joints of their feet have a similar coronet of spines at their extremities. Their thorax projects somewhat between the basis of the wing-covers; their bodies are rather short, and their wing-covers are almost horizontal and quite broad across the middle, which, with the shortness of their legs, gives them a squat appearance.

FULGORA: FULGORIDÆ. A genus and family of insects bearing great resemblance to the *Cicadidæ*. Many of them are distinguished by a curious prolongation of the forehead, the shape of which varies extremely in the different species, which in tropical regions are numerous. The legs are in general fitted for leaping, with large spurs; and the males are destitute of those organs which are employed in the Cicadæ for the production of sounds. We should observe, that Kirby and Spence, on the authority of Stedman's *Surinam*, assert that *Fulgora laternaria* makes a loud noise in the evening, like that made by a razor-grinder, and that the Dutch in Guiana call it *scare-sleep*. Dr. Hancock, however, states that the razor-grinder, or the Aria Aria of the natives, is a specis of Cicada. In the typical genus *Fulgora* the head is dilated in front into the most remarkable porrected protuberances, varying in each species, and which is the part of the body asserted by various writers to emit a strong light by night, analogous to that of the fire-flies.

Mr. Westwood alludes to this luminous

had not found it to be luminous. Hoffmansegg, the Prince Von Nieuwied, and still more recently M. Lacordaire (the two last named authors having been long resident in South America), also concur in this opinion, none of the individuals they had ever seen alive exhibiting the least trace of

AMERICAN LANTERN-FLY
(FULGARIA LATERNARIA.)

luminosity. The majority of the natives also, who had been questioned on the subject, denied the luminous power, although a few affirmed it; hence Lacordaire suggests whether one sex may be luminous and the other not. Dr. Hancock read a memoir on the luminosity of the *Fulg. laternaria* before the Zoological Society, on 24th June, 1834, in which its luminosity is considered entirely fabulous. M. Wesmael has recently reasserted the luminous property of the South American species, on the authority of a friend who had witnessed it alive. And W. Baird, Esq. has informed me of the existence of a Chinese edict, against young ladies keeping lanthorn-flies." Mr. Adam White, in the Annals and Magazine of Natural History, published an extract from a letter of J. Bowring, Esq., of Hong Chong, where the *F. Candelaria* is very abundant, but not known to be luminous. The species are generally very showy, and have been mostly figured by Mr. Westwood. In the British Museum there is a fine collection of them.

FULICA. [See COOT.]

FULMAR. (*Procellaria glacialis.*) A Palmiped bird belonging to the *Petrel* family; abounding in northern latitudes, though rarely seen in warm or temperate climates; in fact, it has been met with not only in arctic and antarctic regions, but even at the foot of those impenetrable barriers, the floating islands and eternal mountains of ice and snow. It measures seventeen inches in length, and weighs twenty-two ounces. The bill is about two inches long, and strongly formed; the hook or nail of the upper mandible, and the truncated termination or tip of the under one, are yellow; the other parts grayish; the nostrils are contained in one sheath, divided into two tubes. The head, neck, all the under parts, and the tail are white; back and wing-coverts blue gray; quills dusky blue; eyes yellowish, sometimes inclining to red. The body is thickly clothed with feathers upon a fine close down.

These birds are extremely greedy and gluttonous, and will devour any floating putrid substances; they feed principally on fish, and on the blubber or fat of whales, and other animals; which being soon convertible into oil, supplies it with provision for its young, and with the constant means of defence; for the Fulmar, like all the Petrels, has a peculiar faculty of spouting from its bill, to a considerable distance, a large quantity of pure oil. Pennant, speaking of those which inhabit the Isle of St. Kilda, says—"No bird is of such use to the islanders as this: the Fulmar supplies them with oil for their lamps, down for their beds, a delicacy for their tables, a balm for their wounds, and a medicine for their distempers." The female is said to lay only one white and very brittle egg, which she hatches about the middle of June.

FUNGIA. A genus of Zoophytes, of which there are several species, both recent and fossil, principally from the Indian seas. They belong to the *Madreporidæa* of De Blainville, and consist of animals in nearly the lowest state of organization; for although they are universally allowed to be animals, they are completely without the power of motion, consisting simply of a living gelatinous film, which is endowed with the capability of constructing for itself a stony support or framework, derived from the surrounding water. In form it is generally orbicular or oval; mouth superior, transverse in a large disc, which is covered by many thick cirriform tentacula; and the disc is solidified internally by a calcareous solid *polyparium*, of a simple figure. We are indebted for the following interesting remarks to the elaborate description given of Fungia by Mr. Rymer Jones. "If we investigate the history of the Fungia a little more closely, it is beautiful to observe in apparently one of the most helpless and useless members of creation, the operations of the same power and foresight that shield and guard the highest and most intelligent. The Fungia, whilst it is alive, lies upon the sand at the bottom of the shallow seas of warm climates, or has its base loosely imbedded in the sand. It is unattached by any pedicle or root, so that a passing wave of any violence might easily take it up and

THICK-TENTACLED FUNGIA.
(FUNGIA CRASSITENTACULA.)

wash it to a distance from the spot it originally occupied. This being the case, what

the wave from turning it upside
is only upon the upper surface
ng crust is spread, which forms
so that should accident reverse
the creature would inevitably
arrangement adopted to prevent
currence is simple enough, but
account less beautiful. The
that coats its laminated surface
lity of secreting little bubbles of
its substance; the bubbles so
though disseminated as it were
are sufficiently buoyant to act
nd thus provided, let the wave
r so far, still the lightest side
most, the floats prevent it from
ed, and the creature settles down
sition upon the smooth bottom
" We may mention that our
thick-tentacled Fungia (*F. cra-*
) is derived from one of the
ages of Discovery, and shows the
jecting from their coral home.
n of corals and zoophytes in the
eum, now most wondrously in-
tains many fine specimens of this
ful and distinct genus. As an
a mantelpiece or on a table,
ll glass, nothing perhaps is so
a fine and symmetrical specimen
.

f. (*Œstrus bovis.*) The Gadfly,
fly, is a Dipterous insect, about
a common Bee, with pale brown
of a pale yellowish brown colour,
rax marked by four longitudinal
ks, and the abdomen by a black
it, the tip being covered with
ured hairs. The genus is re-
r its larvæ residing beneath the
different parts of the bodies of
. When the female of this species
deposit her eggs (which chiefly
August or December), she fastens
of a heifer or cow, and piercing
ith the tube situated at the top
imens, deposits an egg in the
an operation which she repeats
arts of the animal's back. Here
eggs hatch, and the larvæ by
n and suction cause so many
lings or abscesses beneath the
growing gradually larger, ex-
ies of an inch or more in di-
h an opening at the top of each,
hich may be observed the larva
oval maggot, which in time be-
e) imbedded in a purulent fluid.
larvæ remain till the middle of
ummer, when they force them-
from their respective cells, and,
the ground, each creeps beneath
evenient shelter, and lying in an
becomes contracted into an oval
without casting the larva skin,
and hardens round it. Having
n the chrysalis state more than a
forces open the top of its coat, or
ur, and emerges in its perfect
r. Bracy Clark, F.L.S., has paid
attention to the study of the
trides: we refer our readers for
further information to the articles BREEZE-FLY: ŒSTRUS.]

GADUS: GADIDÆ. The *Gadidæ*, or Cod tribe, are a family of Fishes belonging to the Malacopterygious (or soft-finned) order. They include the Cod, Haddock, Whiting, Ling, and others; and are distinguished by the following characters:—a smooth, oblong body, covered with small, soft, deciduous scales; head scaleless; eyes lateral; jaws and anterior part of the vomer furnished with several ranges of unequal, pointed teeth; the gills large, seven-rayed, and opening laterally; and a small beard or cirri at the tip of the lower jaw. Almost all the species have two or three dorsal fins, one or two anal, and one distinct caudal fin; and they have a large, strong, swimming-bladder, frequently dentated or lobed at its borders. They live for the most part in the seas of cold or temperate climates; and from their size and their tendency to congregate in particular localities, as well as from the wholesomeness and good flavour of their flesh, they are of first-rate importance to man. [See COD, &c.]

GALAGO. (*Galago* or *Otolicnus.*) A genus of small quadrumanous animals, inhabiting different parts of Africa, and subsisting chiefly on insect food. They have great eyes; large membranous ears, which double down when at rest; hind limbs of a disproportionate length; and a long and tufted tail. The

SENEGAL GALAGO.—(GALAGO SENEGALENSIS.)

best known species are the GREAT GALAGO (*Galago crassicaudatus*), which is as large as a Rabbit; and the SENEGAL GALAGO (*Galago Senegalensis*), or gum animal of Senegal, the size of a Rat. "These pretty animals have at night all the activity of birds, hopping from bough to bough on their hind limbs only. They watch the insects flitting among the leaves, listen to the fluttering of the moth as it darts through the air, lie in wait for it, and spring with the rapidity of an arrow, seldom missing their prize, which is caught by the hands. They make nests in the branches of trees, and cover a bed with grass and leaves for their little ones. They are a favourite article of food in Senegal."

GALATHÆA. A genus of long-tailed Crustacea. In the British seas four species are recorded as native: their porcelain texture, their sculptured carapace and wide tail, joined to their pleasing colours, especially when alive, render them very at-

tractive. Close to this genus is *Grimothea*, one of the species of which (*G. gregaria*) is met with in the Southern seas near the Straits of Magellan, in countless multitudes.

GALEOPITHECUS. An extraordinary quadrumanous animal of the Lemurine tribe, called the *Flying Lemur*, and sometimes termed the *Colugo*; it is a native of the islands of the Indian Archipelago; and its chief peculiarity consists in the extension of its skin between the anterior and posterior limbs on each side, and between the posterior limbs, including also the tail; by which it receives a parachute-like support in the air, and is enabled to take long sweeping leaps from

FLYING LEMUR AND YOUNG (GALEOPITHECUS VOLANS). WITH THE FRONT PART OF THE SKULL.

tree to tree, somewhat like flying. They may be considered as connecting the Lemurs with the Bats; differing generically from the latter in having their fingers, which are armed with trenchant nails, no longer than the toes, so that the membrane which occupies their intervals, and extends to the sides of the tail, can only answer the purpose of floating in the air. The general anatomy agrees very closely with that of the Lemurs. They inhabit lofty trees in dark woods; to which they cling with all four extremities, and traverse easily by means of their strong and extremely compressed, retractile claws. During the day-time they suspend themselves like Bats from the branches, with the head downwards; but at night they rouse themselves, and make an active search for food, which consists of fruit, insects, eggs, birds, &c. They are very inoffensive animals; and generally produce two young at a birth.

GALERUCIDÆ. A group of leaf-eating beetles, separated from the *Chrysomelidæ* family, and consisting mostly of dull-coloured beetles; having an oblong oval, slightly convex body; a short and rather narrow thorax; slender antennæ, more than half the length of the body, and implanted close together on the forehead; slender legs, and claws split at the end. They fly mostly by day, and are either very timid or very cunning, for, when we attempt to take hold of them, they draw up their legs, and fall to the ground. They sometimes do great injury to plants, eating large holes in the leaves, or consuming entirely those that are young and tender. The larvæ are called short cylindrical grubs, generally of a blackish colour, and are provided with six legs. They live and feed together in swarms, and sometimes appear in very great numbers on the leaves of plants, committing ravages, at these times, as extensive as those of the most destructive caterpillars.

The *Galeruca vittata*, or striped Cucumber Beetle, a North American species recorded by Dr. Harris in his "Insects of Massachusetts," is of a light yellow colour above, with a black head, and a broad black stripe on each wing-cover, the inner edge of which is also black, forming a third narrower stripe down the middle of the back; the abdomen, the greater part of the fore-legs, and the knees and feet of the other legs, are black. It is rather less than one-fifth of an inch long. Early in the spring it devours the tender leaves of various plants; and makes its appearance on cucumber, pumpkin, and melon vines, about the end of May or the beginning of June, or as soon as the leaves begin to expand; and as several broods are produced in the course of the summer, it may be found at various times on these plants, till the latter are destroyed by frost. The females lay their eggs in the ground, and the larvæ feed on the roots of plants. Various means have been suggested to prevent the ravages of these striped cucumber beetles; as, wetting the vines with tobacco water, or with infusions of elder, walnut-leaves, or of hops; others recommend the use of soot, sulphur, Scotch snuff, or pepper to be sifted upon the plants. In this country several species are found, which will be referred to in the works of Messrs. Say, Harris and Curtis.

GALICTIS. A genus of Carnivorous animals allied to the Civets and Genetts.

GALLINÆ. The name given to an extensive order of Birds, including all those which constitute what are commonly termed "poultry," and furnishing us with the greater number of our farm-yard fowls, and with much excellent game. The name *Gallinæ* is applied to them from their affinity to the Domestic Cock, in common with which they have generally the upper mandible vaulted, the nostrils pierced in a large membranous space at the base of the beak, and covered by a cartilaginous scale. Their wings are short, their carriage heavy, and their flight laborious. They have an extremely muscular gizzard, and generally a large globular crop. In general they lay and incubate on the ground, on a few carelessly arranged stems of straw or grass. Some species are polygamous, and some monogamous; in the former the male is always larger and more gaily coloured than the female; in the latter the sexes mostly so quite resemble both in size and colour.

GALLINACEÆ. Some of the most

...birds we have belong to this order; ...s, Turkeys, Fowls, Pheasants, Par-... &c. being of the number. Their ...for the most part, are large and ...; their wings short; and their toes ...eneath, to enable them to scratch ...nd in search of worms, &c. Many ...grain and seeds, whilst others feed ...s, but the greater portion subsist ...on insects. They are mostly poly-...building their rude nests, in retired ...s, on the bare ground. The females ...l species are extremely prolific, and ...to lay eggs nearly all the year; the ...llow the parent mother as soon as ...and she continues to protect them ...are fully grown. Some are easily ...ted; others remain in a wild state; ...ish of nearly all furnish a substan-...wholesome food, while their plu-...s for various domestic and orna-...rposes. In their proper alpha-...der the reader will find them ...described.

INSECT. (*Gallinsecta.*) A fa-...secta, of a small size, which live ...or plants of various kinds. In ...state they have the appearance of ...nd scales, closely attached to the ...ark of the tree they inhabit, and ...distinct external organs. If ob-...spring, their bodies are noticed ...to increase in size, ending in their ...the appearance of a gall, being ...rical, kidney-shaped, boat-shaped, ...skin in some is entire and very ...o others it is incised, or offers ...egments. It is in this state that ...s are impregnated, shortly after ...y deposit their eggs, of which the ...very great; these they deposit ...he ventral surface of their bodies ...er of a cottony secretion. Their ...sequently dry up and become a ...on, which covers the eggs; others ...their eggs in a very abundant cot-...tion, which equally defends them. ...them have been long celebrated for ...ful dyes they yield. A very curious ...tracted by a Homopterous insect, ...s allied to Aphis, has lately been ...from the East by Mr. Morson, ...ch is principally composed of gallic ...tamain, has been particularly de-...a late number of the Pharmaceu-...nal. [See COCCUS: KERMES.]

...INULE. (*Gallinula.*) A genus of ...ich frequent fresh waters, swimming ...g about, or running on land with ...e and swiftness. The common Gal-...(*Gallinula chloropus*), called also the ...-HEN or MOOR-HEN, is about fourteen ...a length, from the tip of the beak to ...of the tail, and weighs from eleven to ...ounces. The bill is upwards of an ...ng, of a greenish yellow at the tip, ...ddish towards the base; whence a ...f horny or membraneous substance ...the forehead as far as the eyes: this ...ge to the bill is perfectly red in the ...g season; at other times it varies or ...into white. The head is small and black, except a white spot under each eye: the irides red: all the upper parts of the plumage dark shining olive green, inclining to brown; under parts dark hoary lead gray: vent feathers black; those on the belly and the thighs tipped with dirty white: the long loose feathers on the sides, which hang over the upper part of the thighs, are black, streaked with white; the feathers just beneath the tail are white; and the legs are dusky green. The toes are very long, particularly the middle one; their under sides flat and broad, whereby it is enabled to swim; and, from this part of its conformation, it may be regarded as the bird which connects the web-footed aquatic fowl with the fin-toed. The body is long, and the legs placed far behind; its feathers thickly set, and bedded upon down. It lies concealed during the day among reeds and willows, by the sides of rivulets: it can run over the surface of such waters as are thickly covered with weeds, and it dives and hides itself with equal ease: it flirts up its tail when running, and flies with its legs hanging down. In the evenings, it creeps by the margins of the waters, among the roots of bushes and long loose herbage, in quest of its food, which consists of insects, small fishes, worms, aquatic plants, and seeds: it is also granivorous; and if killed in September or October, after having had the advantage of a neighbouring stubble, its flesh is very good.

The Gallinule, or Moor-hen, makes its nest of reeds and rushes, closely interwoven, choosing for it a very retired spot close by the brink of the water; and it is said the female never quits it without covering her eggs with the leaves of the surrounding herbage. The female lays from five to eight eggs, of a light yellowish brown, marked with rust-coloured spots. Soon after the young are hatched, they take to the water, and shift for themselves. They differ considerably from the adults till after their second autumnal moulting, having till then a much lighter plumage.

"One circumstance respecting this familiar bird," Mr. Gould observes, "appears to have escaped the notice of most ornithologists: we allude to the fact of the female being clothed in a dark and rich plumage, and having the base of the bill and the frontal shield of a bright crimson-red tipped with fine yellow; her superiority in these respects has caused her to be mistaken for the male, which, contrary to the general rule, is at all times clothed in a duller plumage, and has the upper surface more olive than in the female; the bill is also less richly tinted.

There are very few birds of this genus; and most of them inhabit Java; but they are not by any means remarkable.

GALLIWASP. (*Celestus occiduus.*) A reptile of the Saurian order. It is nearly two feet in length from the nose to the tip of the tail, which, like the body, is thick and strong, tapering pretty suddenly towards the tip: the limbs are short, and the animal's whole appearance is remarkably stout

and plump: the teeth are small in front, but as they approach the back part of the jaws they increase considerably in size. It is a native of the West India Islands, and seems to be particularly common in Jamaica, where it is said to frequent woody and marshy districts. It is usually of a pallish brown colour, clouded with spots and bands of deeper cast, but it is reported to change its colour occasionally to a lively golden yellow.

GALLOWAY. A peculiar breed of strong, active, middle-sized horses; so called from the county of Galloway, in Scotland, which was formerly noted for them. Tradition reports, that the stock originated from several Spanish stallions, which swam on shore from some ships wrecked on the coast, belonging to the famous Armada; and, propagating with the mares of the country, furnished the kingdom with their posterity.

GAMBET. (*Totanus.*) A genus of wading birds, allied to the *Scolopacidæ*, and including numerous species. The GREENSHANK GAMBET (*Totanus Glottis*) is the largest European species, being nearly the size of the Godwit, with the beak comparatively stout, and a little recurved; ashy-brown above and on the sides, with the margins of the feathers punctated with brown, the croup and belly white, and tail rayed with narrow irregular bars of gray and white; the feet green: in summer the throat and breast are marked with dusky spots, which disappear after the breeding season. It breeds on the margins of lakes, which it mostly frequents; is very clamorous when on the wing; and in winter resorts to the sea-shore.—The DUSKY GAMBET (*Totanus fuscus*), another European species, but rare in Britain, is more delicately formed, with particularly slender beak and feet, and beautifully barred tail and coverts; it becomes entirely suffused on the under parts with fuliginous black in the spring.—A third, the REDSHANK GAMBET (*Totanus calidris*), is very abundant in this country, breeding also not uncommonly in marshes near the sea-shore, and especially about the estuaries of rivers.—There are others, as the delicate WOOD GAMBET (*Totanus glareola*), remarkable for the extraordinary length of its legs, and its habit of gracefully tripping across the broad floating leaves of aquatic plants when in search of its prey; and the GREEN GAMBET, (*Totanus ochropus*), with shorter legs, and easily known as it flies by its conspicuous white rump.

GAME, Black and Red. [See GROUSE.]

GAMMARUS: GAMMARIDÆ. A genus and family of Crustaceans belonging to the order *Amphipoda*. The body of this marine genus is covered with a coriaceous elastic tegument, generally compressed and arched; the posterior extremity of the tail is not furnished with swimmerets, but its appendages are in the form of cylindrical or conical styles. Two at least of the four anterior legs are terminated by claws. The vesicular bags (the use of which has not been ascertained) are situated at the external base of the legs, commencing with the second pair, and accompanied by a small plate. The pectoral scales enclosing the eggs are six in number. There are several species of this family found in the British seas; for an account of which we must refer our readers to the works of Milne Edwards and Kroyer, but especially of the latter. The genera *Talitrus*, *Orchestia*, *Dexamine*, *Amphithoe*, and others recorded in the List of Crustacea in the British Museum, belong to this family. The habits of some of these are very interesting. [See AMPHIPODA, &c.]

GANNET, or SOLAN GOOSE. (*Sula Bassana.*) This Palmipede bird is about the size of the tame goose; its length two feet nine inches, and its weight nearly seven pounds. The bill is six inches long, jagged at the sides, and straight almost to the point, where it inclines downwards; a darkish line passes from the brow over the eyes, which are surrounded with a naked blue skin, and, like those of the Owl, are set in the head so as to look nearly straight forward, and the extreme paleness of the irides gives them a keen wild stare. A loose black bare skin,

COMMON GANNET.—(SULA BASSANA.)

capable of great distension, hangs from the blades of the under bill, and extended over the throat, serves it as a pouch to carry provisions in the breeding season to its mate and young. The neck is long; the body flat, and very full of feathers; the crown of the head, and a small space on the hind part of the neck, are buff-coloured; and, with the exception of the quill and bastard-wing feathers, the rest of the plumage is white. The legs and toes are black; but the fore part of both are marked with a pea-green stripe; and the tail is composed of twelve tapering sharp-pointed feathers, the middle ones being the longest. The male and female are nearly alike; but the young birds, during the first year, are of a dusky hue, sparkled with numerous triangular white spots; and it is not until the third year that the plumage is perfected.

In the Hebrides, the north of Scotland, and in Norway, this species is very abundant; it is also met with in great numbers on the coasts of Newfoundland and other northern regions, as well as in more temperate climes of both hemispheres. Their food consists chiefly of salt-water fish, the

ghout the year; but if that be
will lay another, and in like
d, which she is generally per-
a. Their greatest known ren-
Hebrides and other solitary
North Britain, such as the
rth of Forth, and Ailsa Crag,
Clyde, where their nests, in
May and June, are described as
ed together, that it is difficult
out treading upon some of
is said that the swarms of
so prodigious, that when they
r, they stun the ear with their
shadow the ground like the
inhabitants of the islands
rds breed derive considerable
om the produce of their eggs;
them they encounter the most
ow climbing rocks which are
sible, and now clinging to the
ves which, at a prodigious
ng a raging sea.
ch's "Cornish Fauna" we are
he Gannet takes its prey in a
ner from any other of our
; for, traversing the air in all
h a heavy and irregular flight,
iscovers the fish it rises to such
periences shows best calculated
r a downward motion to the
a, and then partially closing
falls perpendicularly on the
ly without success, the time
ange and emersion being about
s. When pilchards are col-
narrow space, the number and
he Gannets are such, that it is
y do not fall on and kill each
clamour indeed at such times
to be well on their guard, but
ahle that every one in falling
ked on the fish it intends to

GAR-FISH.—(PIKE BELONE.)

Scotch, and Irish coasts. It is from twenty to twenty-four inches in length, with long, narrow, beak-like snout, the under jaw projecting; the teeth are numerous and minute, the eyes large; the dorsal and anal fins opposite each other; pectoral and ventral fins small; and the tail considerably forked. The upper part of the head and back is of a dark green hue, the sides paler, and the belly a silvery white. It is a very vivacious fish, and seizes the bait with avidity. The flesh of the Garfish has somewhat the flavour of Mackerel, but is more dry; and the bones are green.

GARROT. (*Clangula.*) A genus of the Duck family, widely distributed over the colder and temperate regions of both Europe and America. The head is large, compressed, rounded above; bill shorter than the head, higher than broad at the base; neck short and thick; body ovate and depressed; eyes small; legs very short, and placed far behind; hind toe lobed. They breed in the colder regions of Europe and America, returning to more temperate climes in winter. They haunt rivers, lakes, estuaries, and feed chiefly on molluscs, and also on larvæ, crustacea, and sometimes small fish, for which they dive. 1. The Golden-eyed Garrot (*Clangula vulgaris* is a common species in Britain; 2. The Harlequin Garrot (*Clangula histrionica*) occurs as a rare straggler. [See Duck.]

GASTEROPODA. The name of a class of molluscous animals which move from place to place by means of a fleshy disc, or

teropoda inhabit fresh waters, but most of them are marine animals: some are formed for crawling, as the snail, the whelk, &c.; some are more adapted for swimming; while a few of this class attach themselves to the surface of rocks, scarcely varying their locality, as is the case with the limpet; this attachment being produced by the adhesion of the muscular disc, or foot, which acts like a sucker, and can at any time be detached by the will of the animal.

In the work of Mrs. Gray, of the British Museum, on Molluscs, are figures of the animals of most of the genera of Gasteropoda. To this very carefully executed and authoritative work, we refer our readers, as well as to the various miscellaneous articles in this work; such as ACHATINA, BULIMUS, SNAIL, &c.

Fossil Gasteropoda. Among the numerous organic remains which exist, none are more extensively diffused throughout the globe, occupying the various geological formations, than fossil univalve shells. It is, indeed, asserted by some of the most experienced geologists, that every fossil turbinated univalve of the older beds, from the transition lime to the lias, belongs to the herbivorous genera, which class extends through every stratum in the entire series of geological formations, and still retains its place among the inhabitants of our existing seas: while, on the other hand, the shells of marine carnivorous univalves are very abundant in the tertiary strata above the chalk, but are rare in the secondary strata from the chalk downwards to the inferior oolite; beneath which no trace of them has yet been found.

GASTEROSTEUS. The name of a genus of Acanthopterygious fishes. [See STICKLEBACK.]

GASTROBRANCHUS. (*Gastrobranchus glutinosus*). The HAG. A cartilaginous fish, which in its general appearance bears a near resemblance to the Lampreys, but which in the Systema Naturæ of Linnæus has been considered as belonging to the class *Vermes*. It is of a dusky bluish cast above, and reddish towards the head and tail; is from four to six inches long, and is remarkable for its total want of eyes: the mouth, which is situated beneath, is of an oblong form: on each side are two beards or cirri, and on the upper part four; in front of the top of the head is a small spout-hole, furnished with a valve, by which it can at pleasure be closed: the teeth, which are of an orange-colour, are arranged on each side of the mouth in a double-row, and in the middle of the roof of the mouth is one sharp-pointed and curved tooth. It has no scales, nor any kind of fin but that which forms the tail, the extremity of the body, where it is surrounded by the caudal fin, which is very shallow, being pointed. Beneath the body, from head to tail, runs a double row of equi-distant pores, through which, on pressure, exudes a viscid fluid; and beneath the body are two spiracles having apertures communicating with a series of six globular red cells or vesicles on each side of the body. "The manners of this fish are represented as highly singular: it is said to enter into the bodies of such fishes as it happens to find on the fishermen's hooks, and which consequently have not the power of escaping its attack, and by gnawing its way through the skin, to devour all the internal parts, leaving only the bones and the skin remaining. Another peculiarity in this animal consists in its uncommonly glutinous nature: if put into a large vessel of sea-water it is said in a very short space to render the whole so glutinous as easily to be drawn out into the form of threads. When taken out of water the Gastrobranchus is said to be incapable of living more than three or four hours." The species we have been describing is called the *Blind* Gastrobranchus, and is an inhabitant of the Northern seas. Another, and a much larger one, called the *Dombeyan* Gastrobranchus, from its having been first noticed by M. Dombey, is found in the South American seas.

GASTROCHÆNA. The name given to a genus of Acephalous Molluscs, found on the coasts of Great Britain and America. They inhabit an equivalve, inequilateral shell, united by a ligament, and having in the interior a small spoon-shaped curvature. The Gastrochæna penetrates and makes its shells in hard substances; and seldom exceeds half an inch in length. They are found in the hollows of shells or other marine substances.

GAVIAL, or GARIAL. An enormous Reptile found in India, to which the name of the GANGETIC CROCODILE (*Crocodilus Gangeticus*) is sometimes applied; but the sub-genus termed *Gavial*, by Cuvier, is so strikingly distinguished both from the Crocodile of the Nile and the Alligator by the peculiar form of the mouth, that it is hardly possible, even on a cursory view, to confound it with either of them; the jaws being remarkably long, narrow, and straight, constituting the anterior part or beak, spreading out at its base, and terminating in front, so as to remind the observer of the beak of the Spoonbill. The head, properly so called, has its sides straight and perpendicular, the upper surface being quadrilateral; and the mandible, instead of being continued from the forehead by a gradual slope, sinks suddenly to follow a straight and nearly horizontal direction. In the general form and colour of the body and limbs it resembles the common Crocodile, but the number of transverse zones or bands formed by the rows of scales on the back, is greater than in that species. The teeth are nearly double the number of those of the Nilotic Crocodile, and are of equal size throughout the whole length of the jaws. It is quite as aquatic in its habits as is the African species; its hind feet fully webbed; and the crest on the tail, increasing the surface by which it strikes the water, is much elevated. This powerful animal frequently attains the length of twenty-five feet; and, from its strength and ferocity, is truly formidable. In one respect, however, it is found very serviceable, viz. in devouring the numerous dead bodies of men and animals which are committed to the "sacred river," the effluvia, arising from which would other-

wise, in all probability, be productive of contagious diseases. Analogous species of Crocodiles have been found in a fossil state in Yorkshire and other places. The fossil group is named *Teleosaurus*.

GAZELLE. (*Antilope Dorcas.*) Of all the Antelopes of the East none are so celebrated for beauty as the Gazelle; and oriental poets, from time immemorial, have thought that the highest compliment they could pay the female sex was to compare the eyes of a lovely woman with the lustrous organs of vision which distinguish that light and graceful animal. This very beautiful species inhabits Arabia and Syria, where they are seen in large groups, bounding across the desert with such amazing fleetness that they seem, bird-like, to skim over the surface. It is so swift that the greyhound is generally unable to overtake it without the assistance of falcons, which fly at its head and thus check its speed till the

GAZELLE.—(ANTILOPE DORCAS.)

dogs regain their lost distance. The Ariel Gazelle is about twenty inches high at the shoulder; its limbs are slender, but vigorous; and all its motions are spirited and graceful. It is of a dark fawn colour above, and white below; the upper parts being divided from the lower by a deep dark band along the flanks. On each side of the face a broad stripe of white passes from the horns over the eyes to the nose. Wild and timid as the Gazelle is, when taken young it is readily domesticated; and it is frequently seen at large in the court-yards of houses in Syria, their exquisite form, general beauty, and playfulness rendering them especial favourites.

GECARCINUS. The name given to those Crustaceans which are formed to live at a distance from the sea; some residing in fresh water, and some burrowing in the ground, even at a distance from water. [See *Land Crab*, art. CRAB.]

GECKO. This name is given to a considerable number of Saurian Reptiles, and is said to be taken from the sound of their voice, which resembles the word *gecko* uttered in a shrill tone. Our figure, *which represents a common New Holland species, is named by Mr. Gray White's Phyllure, or Gecko.* It was first described by Dr. Shaw in White's Voyage to New South Wales, and is the *Phyllurus platurus* of naturalists; but though very characteristic of the group we prefer giving an account of the COMMON GECKO (*Gecko verus*):—It is of a thicker and

WHITE'S GECKO.—(PHYLLURUS PLATURUS.)

stouter form than most other lizards, having a large and somewhat triangular flattish head, covered with small scales, a wide mouth, large eyes, minute teeth, and a broad flat tongue. The limbs are of moderate length, and the feet are of a broader form than in the rest of the genus *Lacerta*, each toe being dilated on the margins, and divided beneath into a great number of parallel transverse lamellæ, without any longitudinal mark or furrow; all the toes, except the thumbs, are furnished with small claws; the tail, which is generally longer than the body, is marked, more or less, according to the age, into divisions or verticillated rings: the whole animal is covered on the upper parts with numerous, distant, round warts or prominences, approaching more or less to an acute form in different individuals, and sometimes obtuse: beneath each thigh is a row of perforated papillæ, as in the Green Lizard and many others: the under parts of the body are covered with scales of somewhat dissimilar appearance, but all approaching to a round figure."

In describing the habits, food, &c. of the *Geckotidæ*, Mr. Broderip observes that "the greatest number feed on small animals, such as insects, their larvæ and pupæ. These they catch either by lying in ambush, or by pursuing their feeble prey in the holes and dark crevices to which it retires. The structure of their feet enables them to run in every direction over the smoothest surfaces, and they can even remain suspended beneath the large leaves which a luxuriant tropical vegetation so frequently puts forth. The sharp and *retractile* nails with which the *feet of the greater* number are armed enable them to cling to and make rapid progress on trees with the smoothest bark, or penetrate

the meaningless vagary of the hour, but a frolicsome dance, the wooing of its mate,

LARVA AND CHRYSALIS OF GHOST-MOTH.

which lies concealed in the herbage over which it sports. The two insects are something similar in their general form, but very differently marked. The male exhibitor is known by his four glossy, satiny, white wings, bordered with buff; the lady reposer

MALE GHOST-MOTH.
(HEPIOLUS HUMULI.)

has her upper wings of a tawny yellow, spotted and banded with deep brown. They are very inert creatures, easily captured; and their existence appears to be of very short duration, as we soon cease to observe them, either in action or at rest. The male probably becomes the prey of every bird that feeds by night; his colour and his actions rendering him particularly obnoxious to dangers of this nature; and the frequency with which we find his wings scattered about, points out the cause of death to most of them. The bat pursues with great avidity all those

FEMALE GHOST-MOTH
(HEPIOLUS HUMULI.)

creatures that fly in the evening; and by its actions it seems to meet with constant employment, and has greater probability of success than some insectivorous birds that *feed by day*, as all the myriads which abound *at this time* are the sole prey of itself and a *few nocturnal ramblers*. From this singular flight in the twilight hour, haunting as it were one particular spot, the fancy of some collector, considering it as a spectre-like action, named it the Ghost-moth.

GIBBON. (*Pithecus lar.*) The Gibbon, or Long-armed Ape, is a species of the *Quadrumana*, distinguished from others by the slenderness of its form, but more particularly by the extraordinary length of its arms, which, when the animal is standing erect, reach to the ankle-joints. The hands and feet are even more adapted for climbing than those of the Orang-Outang; their form, in fact, is admirably suited to their arboreal habits; and they are here observed to sweep from the branch of one tree to another with surpassing velocity: suspending themselves by their long anterior limbs, they launch onwards by an energetic muscular movement, seizing with wonderful precision the distant branches, and continuing their progression without any pause or perceptible effort. It is worthy of note, that their feet, which are very long, have the soles turned so much inwards as to afford no support to the erect posture. The colour of the Gibbon is black; but the face is commonly surrounded with a white or grey beard. There is a variety, called the WHITE GIBBON, which

GIBBON, OR LONG-ARMED APE.
(PITHECUS LAR.)

differs from the above species in being entirely white, except the face and hands, which are black.—Notwithstanding the apparent ferocity of the Gibbon, and its ungainly figure, it is of a more gentle and tractable nature than any of its congeners; and it has even been commended for the decorum and decency of its behaviour. It inhabits the islands of the Indian Archipelago.

GILTHEAD. (*Chrysophrys auratus.*) An Acanthopterygious fish, of a broad and compressed form, about twelve inches in length, and somewhat resembling the Bream. It is found in abundance in the Mediterranean, and is sometimes taken on the coasts of France and Spain. The back is sharp, and of a dusky green or silvery gray colour; between the eyes there is a gold-coloured crescent-shaped stripe, from which it receives its name: the incisor teeth in each jaw are conical, the molar ones roundish; the tail is very forked, the fins are greyish-blue, the dorsal fin extending almost the

whole length of the back. It feeds on various kinds of crustacea and molluscs; and chiefly inhabits deep waters and bold rocky shores.

GIRAFFE, or CAMELOPARD. (*Camelopardalis Giraffa.*) This most remarkable Ruminant, which in its general structure most nearly approaches the Deer, has points of affinity, also, with the Antelopes and Camels, besides very striking peculiarities of its own. If height alone constituted precedency among quadrupeds, the Giraffe, as Le Vaillant justly observes, must hold the first rank. The enormous apparent length of the fore legs and its long tapering neck must strike every one at the first glance: while its small and elevated head, its large and brilliant eyes, its mild aspect, and the whole contour of the animal, differing from all others, cannot fail to excite admiration; for, notwithstanding the unusual proportions of the limbs, its general form is not merely elegant but highly picturesque. The horns of the Giraffe differ both in texture and shape from

SKULL OF GIRAFFE.

those of all other horned quadrupeds; forming, as it were, a part of the skull, and consisting of two porous bony substances, about three inches long, with which the top of the head is armed, and which are placed just above the ears, and crowned with a thick tuft of stiff upright hairs: a considerable protuberance also rises on the middle of the forehead between the eyes, which appears to be an enlargement of the bony substance, similar to the two horns just mentioned. The neck is furnished with a very short stiff mane. The tail is of moderate length, gradually tapering towards the end, and terminating in a tuft of long hair. The fore part of the body is very thick and muscular; the hind part thin and meagre. The Giraffe, in its wild state, when full grown, measures seventeen feet from the top of the head to the fore feet; the female, however, is not so high; and it must be understood that this measurement is taken at the maximum height, none of those brought to or bred in Europe having reached more than fourteen feet. At first view the fore legs seem twice the length of the hind; but this difference, on accurate examination, appears to result chiefly from the extraordinary height of the shoulders.

The colour of the Giraffe is a light fawn, marked with numerous large spots of a darker hue, less regularly shaped on the sides than on the neck and shoulders. The vertebræ of the neck are slightly curved; but although nothing can exceed the gracefulness of form which this part sometimes presents, the fewness of the joints prevents the neck from being generally bent or arched with swan-like elegance. The peculiarities of conformation which this animal displays are all adapted to the mode of life which is natural to it; for it is destined to browse upon the foliage and young shoots of trees, at a height far greater than that which any other animal can reach, whilst standing on the ground. For this purpose it is furnished with an elongated prehensile tongue, with which it lays hold of the tender branches, and draws them into its mouth; being assisted by its projecting upper lip, which is at once flexible and very muscular. In order to bring its mouth to the ground, which it seldom does except to drink, or to pick up some unusual delicacy, the Giraffe is obliged to stretch its fore legs widely apart, and to bend its neck into a semicircular form. "The head of the Giraffe resembles that of the camel in the absence of a naked muzzle, and in the shape and organization of the nostrils, which are oblique and narrow apertures, defended by the hair which grows from their margins, and surrounded by cutaneous muscular fibres by which the animal can close them at will. This is a beautiful provision for the defence of the air passages, and the irritable membrane lining the olfactory cavities, against the fine particles of sand which the storms of the desert raise in almost suffocating clouds. The large, dark, and lustrous eyes of the Giraffe, which beam with a peculiarly mild but fearless expression, are so placed as to take in a wider range of the horizon than is subject to the vision of any other quadruped. While browsing on his favourite acacia, the Giraffe, by means of his laterally projecting orbits, can direct his sight so as to anticipate a threatened attack in the rear from the stealthy lion, or any other foe of the desert. To an open attack he sometimes makes a successful defence by striking out his powerful and well-armed feet; and the king of beasts is said to be frequently repelled and disabled by the wounds which the Giraffe has thus inflicted with his hoofs. The horns of the Giraffe, small as they are, and muffled with skin and hair, are by no means the insignificant weapons they have been supposed to be. We have seen them wielded by the males against each other with fearful and reckless force; and we know that they are the natural arms of the Giraffe most dreaded by the keeper of the present living Giraffes in the Zoological Gardens, because they are most commonly and suddenly put in use. The Giraffe does not butt by depressing and suddenly elevating the head, like the deer, ox, or sheep; but strikes the callous obtuse extremity of the horns against the object of his attack with a side-long *sweep of the* neck. One blow thus delivered at *full swing* against the head of an unlucky attendant would be fatal:—the female once drove her horns in sport through

an inch board. Notwithstanding those natural arms of hoofs and horns, the Giraffe does not turn to do battle except at the last extremity; where escape is possible, it seeks it in flight. This is extremely rapid, especially along rising ground; but cannot be maintained for a sufficient period of time to enable it to escape the Arab mounted on his long-winded steed. The paces of the Giraffe, owing to the disproportion between his long legs and short body, are very peculiar: when walking at a brisk rate, it seems to move forward simultaneously the two legs of the same side, as noticed of old by the learned bishop of Sicca, in his account of the presents brought to Hydaspes by the Abyssinian ambassadors." "In the sanded paddock appropriated to the Giraffes in the Zoological Gardens, they exhibit in the warm days of summer all their various and singular paces. In the simple walk, the neck, which is then stretched out in a line with the back, gives them a stiff and awkward appearance; but this is entirely lost when they commence their graceful undulating canter." "The tongue is an organ exquisitely formed for prehension; it is used to hook down the branches which grow beyond the reach of the muzzle of the Giraffe, and the animal in captivity instinctively puts it to use in a variety of ways. We have seen the Giraffe, in the Jardin des Plantes at Paris, stretching upwards its neck and head, and protruding its tongue to the full extent, to hook out single straws, which were platted into the partition, separating it from the contiguous inclosure. In our own menagerie at Regent's Park many a fair lady has been robbed of the artificial flowers which adorned her bonnet, by the nimble filching tongue of the rare object of her admiration. The Giraffe seems, indeed, to be guided more by the eye than the nose in the selection of objects of food; and if we may judge of the apparent satisfaction with which the mock leaves and flowers so obtained are masticated, the tongue would seem by no means to enjoy the sensitive in the same degree as the motive powers. The difference in the size of the nerves of sensation and motion which we observed in the dissection of the tongue accords with these habits of the living animal. From the same dissection it was proved that the movements of the tongue, both those of extension, prehension, and retraction, were due to muscular, and not, as Sir Everard Home supposed, to vascular action. Observations of the living animal, and dissection of the dead, have at length dispelled most of the errors and doubts which obscured the exact knowledge of the nature and zoological affinities of the Giraffe." —"A Giraffe more than two-thirds grown will eat daily in confinement eighteen pounds of clover hay, and eighteen pounds of a mixed vegetable diet, consisting of carrots, mangel-wurzel, barley, split beans, and onions; and will drink four gallons of water. They copulate in March. The female has four inguinal udders: she brings forth one *young at a birth*; and the period of gestation *is* fifteen months. The new-born Giraffe *measures* six feet from the fore-hoofs to the top of the head. In a few hours it is able to follow the dam. It resembles the mature animal in the markings of the hide. The first Giraffe known to have been produced in captivity was brought forth in June, 1839, at the gardens of the Zoological Society of London." —*Brande's Dict.* Two varieties of this curious animal are known; one of them peculiar to Nubia, Abyssinia, and the adjacent districts; the other a native of Southern Africa.

The remains of an animal closely allied to the Giraffe has been found in a fossil state, by Capt. Cautley and Dr. Falconer, in the Seewalik Hills in India. They have described it under the name *Sivatherium*. The head is a gigantic resemblance of that of the Giraffe; as may be seen in the fine specimen preserved in the gallery of the British Museum.

GLASS-SNAKE. The name given in North America to a species of lizard, the OPHISAURUS VENTRALIS. It belongs to the family ZONURIDÆ of Mr. Gray, and has doubtless acquired its name from its "brittleness," —a habit not uncommon with lizards of allowing their tails to be left in the hands of any who surprise them.

GLAUCOPIS. A genus of birds belonging to the family CORVIDÆ; the only known species being the GLAUCOPIS CINEREA, or NEW ZEALAND CROW. This bird, which has all the habits of a crow, is called by the natives of New Zealand *Kokako*. Its plumage is a very dark green, not much varied in any part of the body; the legs are black and coarse, the claws long. It has a strong black beak, a little curved; and a small brilliant light-blue flap hanging down on each side from the ear: the colour of these flaps fades, however, immediately the bird is dead, and becomes of nearly the same hue as its plumage.

GLAUCUS. A genus of molluscous animals found in the warmer latitudes floating in the open sea, and remarkable for their beautiful azure blue and silvery tints. They are about one inch and three quarters in length, with a subcylindrical body, and the tail terminating in a sharp point, the head furnished with four very short tentacula, and the sides of the body having tufts or branchiæ disposed in pairs, surrounded by digitated appendages, fitted for swimming.

GLIRES. (Lat. *plis*, a dormouse.) The fourth order of Mammalia in the Linnæan system, distinguished by two flat incisors in each jaw. They are also called RODENTIA, or GNAWERS.

GLOBE-FISH. [See DIODON and TETRODON.]

GLOMERIS. A myriapode bearing a strong resemblance to the woodlouse, in its oval form, and its habit of rolling itself into a ball. [See MYRIAPODA and EURYBOLUS.]

GLOW-WORM. (*Lampyris noctiluca*). This curious and interesting insect (the female of which, being expressly called by this name), is seen during the summer months,

as late as the close of August, on dry banks, short woods, pastures, and hedgerows, exhibiting, as soon as the dusk of the evening commences, the most vivid and beautiful phosphoric splendour. The male insect is

GLOW-WORM.—(LAMPYRIS NOCTILUCA.)

rather more than half an inch in length; the head is of a dun colour, the thorax margined with dusky red, as are also the legs and the edges of the segments of the body; and the wings are shorter than the body. The female is wingless, but in most other respects resembles the male: the thorax is semicircular; the body is very soft, of an oblong form, and pointed at the extremity. It is hardly yet determined with certainty whether the male Glow-worm is at all luminous; but it is universally understood that if it be, it is in a very slight degree. The phosphorescent light emitted by the female, and which can be increased or lessened at will, proceeds from the abdomen, near the tail: it is of a yellow colour, with a very slight cast of green. The larva, pupa, and complete female insect scarcely differ perceptibly from each other in general appearance, but the phosphoric light is strongest in the perfect animal. The general idea among naturalists is, that the light emitted by the female is for the purpose of attracting the other sex; and in numerous instances have poets availed themselves of so pleasing a simile as "the Glow-worm's amorous fire," to illustrate the pure intensity of that flame which so often burns in a lover's breast. Discarding the poetical metaphor, however, we may observe that the Glow-worm is a slow-moving, inactive insect, and its light not perceptible in the day-time, even if carried into a darkened room, unless the creature is turned on its back, and put in motion; but as night advances, its lamp again begins to burn. On this subject Mr. Knapp remarks, that on a warm dewy evening at the end of September he observed on the house-bank multitudes of these small evanescent sparks in the grass. "The number of them and their actions, creeping away from our sight, contrary to that half-lifeless dullness observed in summer, suggested the idea that the whole body had availed themselves of this warm moist evening to migrate to their winter station. A single spark or so was to be seen some evenings after this, but no such large moving parties were to be discovered again. If we conclude that the summer light of the glow-worm is displayed as a signal taper, the appearance of this autumnal light can have no such object in view, nor can we rationally assign any use at all to the creature itself, unless, indeed, it serves as a point of union in these supposed migrations, like the leading call in the flight of night-moving birds. The activity and numbers of these insects, in the above-mentioned evening, enabled me to observe the frequent presence and disappearance of the light of an individual, which did not seem to be the result of will, but produced by situation." [See LAMPYRIS: ELATER.]

GLUTTON. (*Gulo arctiscus.*) A carnivorous quadruped, of a very voracious nature, and about the size of a large Badger; between which animal and the Polecat it seems to be intermediate; nearly resembling the former in its general figure and aspect, and agreeing with the latter as to its destructive habits. The muzzle, beyond the eyes, is black-ish brown, covered with hard shining hair; between the eyes and ears runs a whitish or ash-coloured band or fillet; the top of the head and back are black-brown, the sides inclining to a chestnut colour; and the feet are black. These animals are slow and comparatively deficient in agility; but they are very persevering, determined, and cunning. In the northern regions, both of the Old and New World, they are said to be of

SKULL OF GLUTTON.
(GULO ARCTISCUS.)

uncommon fierceness and strength, sometimes even disputing their prey with the Wolf and Bear. They often proceed at a steady pace for miles, hunting out weak or dying animals, and stealing unawares upon hares, marmots, birds, &c. They are said to surprise the larger quadrupeds, such as the Rein-deer and the Elk, as they lie asleep; and to tear the neck and throat in the same manner as the Weasel. What they cannot devour at once they are said to hide under ground or in a hollow tree. They prefer putrid flesh, and are extremely fetid. The female brings forth two young at a litter once a year. The fur is much used for muffs, linings, &c.; and the skins brought from Siberia are much preferred to others, from their being of a more glossy black. This animal is also called the WOLVERENE.

GLYCIPHILA. A genus of Tenuirostral birds belonging to the family *Meliphagidæ*, of which we may mention GLYCIPHILA FULVIVENOSA, or the FULVOUS-SHOOTED HONEY-EATER. This species, Mr. Gould observes, differs sufficiently from the true *Meliphagi* to fully justify its separation into a distinct genus. It prefers to dwell among the trees that crown the low stony ridges, rather than those growing on the lower lands or the

brushes; its flight is rapid, it mounts high in the air, and flies off to a distance with an extremely rapid horizontal and even motion. The song is rather remarkable, being commenced with a single note slowly drawn out, and followed by a quick repetition of a double note, repeated several times in succession, and mostly uttered when the bird is perched on the topmost branch of a tree. It is an exceedingly active bird among the branches, gracefully clinging about and around the flowers of the *Eucalypti* in search of food. It builds in some low bush or scrubby plant, near the ground, the nest being of a compact cup-shaped form, constructed of dried grasses, and lined with soft wool. The eggs are rather large, and often much lengthened; sometimes quite white, but more generally blotched with large marks of chestnut-red. It feeds on the pollen of flowers and insects.

GLYPTODON. The name given to an extinct quadruped, of gigantic dimensions, which, like the Armadilloes of the present day, was covered with a tesselated bony armour. In size it was equal to the Rhinoceros. Prof. Owen has published an elaborate memoir on it, which is beautifully illustrated. The fine specimen in the College of Surgeons must strike every visitor by its dimensions, curious characters, and state of preservation. It was found in South America.

GNAT. (*Culex.*) The *Culicidæ*, or Gnat tribe, are a family of Dipterous insects, whose mouths are furnished with bristly stings, included in flexile sheaths. Some of the species are extremely troublesome, as they pierce the skin to feed upon the blood, and at the same time inject an irritating poisonous fluid. Their flight is accompanied by a humming noise, occasioned by the vibration of their wings; they seldom appear in the day-time, except in thick woods, and they abound in moist situations, which is easily accounted for by their larvæ being inhabitants of the water. In this state they are very active, swimming with great agility, and often descending; but coming to the surface to breathe, which they do head downwards, the respiratory orifice being at the end of a very prolonged spiracle arising from the end of the abdomen. — That well-known insect the Common Gnat (*Culex pipiens*) is produced from a singular-looking aquatic larva: it has a large head, furnished on each side with a pair of antennæ-like jointed processes; the thorax large and angular; the body suddenly lessening from this part, and continuing of nearly the same size to the tail, which is abruptly truncated, and tipped with four foliaceous processes. In about fifteen days' time the larvæ are full grown, and arrive at the pupa state; the animal then appears to have a rounded form, is very active, and still inhabits the water; the position of its breathing apparatus, however, is now altered, being situated at the anterior part of the body, and consists of two little tubes, which are applied to the surface of the water for the reception of air. When ready to assume the perfect state, it rises to the surface, and the Gnat quickly emerges from its confinement. A warm, rainy season is most favourable to the evolution of Gnats; and, in such summers, particular districts in most countries are occasionally pestered by them in countless swarms. Those persons who inhabit the more favoured regions of the European continent can hardly conceive what torments are endured from them in some parts of the world; but of all people the Laplanders appear to be the greatest sufferers; for during the heats of their short summer, the Gnats fill the air with such swarming myriads, that the poor inhabitants can hardly venture to walk out of their cabins, without having first smeared their hands and faces with a composition of tar and cream, which is found by experience to prevent their attacks.

A very small black Gnat (*Culex reptans*), with transparent wings, and the legs marked by a white bar, is particularly troublesome in marshy districts during the evening, by its creeping motion on the skin of the face, &c.

To the above we may add, that the Mosquito (*Culex mosquito*), so much dreaded by all who visit the West Indies and America, where its bite seems to operate with peculiar malignity, is a species of Gnat which derives additional vigour from the warmer and moister atmosphere. But it is not wonderful that in uncultivated wastes, where the waters stagnate, and the heat of the sun is almost insupportable, that the atmosphere should frequently be filled with clouds of these insects, varying in size from three or four inches in length to a minuteness only discernible by the assistance of a microscope. [See Mosquito.]

GNATHODON. A genus of bivalve shells, of which there is one well-known species, (*Gnathodon cuneatus*), from New Orleans. It is ovate, equivalve, and equilateral; and is known from all other shells by the characters of the hinge, having in one valve, a sharp, angular, notched, cardinal tooth, and two lateral teeth, the posterior of which is elongated, and the anterior angulated, tortuous, shaped like a jawbone; in the other valve, two cardinal and two lateral teeth, the interior of which is wedge-shaped. Ligament internal, ensiform; muscular impressions two. The name has also subsequently been given to a genus of birds. [See next article.]

GNATHODON. A genus of birds described by Sir W. Jardine, from a specimen which belonged to Lady Harvey. From the contour of its beak, which has the upper mandible strongly hooked, as in the Dodo, and the under mandible deeply notched, it is supposed by Mr. Gould to be frugivorous or granivorous; the beak being expressly adapted to denude palm nuts, or other strongly coated seeds, of their hard outer covering. Mr. Gould considers that it is more nearly allied to the Pigeon tribe (*Columbidæ*) than to any other family; the form of the body and wings, and the structure of the feathers, indicating this affinity. The only known species, *Gnathodon strigi-*

rostrum, is rather larger than a partridge, and has the head, neck, breast, and belly, of a glossy green black; the back, wings, tail,

and under tail-coverts, of a deep chestnut red: the beak and naked part round the eye are of a yellowish colour. It is believed to be a native of one of the South Sea Islands; and the *Didunculus*, found by the recent American Voyage of Discovery under C. Wilkes, is thought to be the same bird.

GNU. (*Boselaphus Gnu.*) A very singular species of Antelope, which, at first sight, appears to be a monstrous being, compounded of parts of different animals. Its general colour is a deep umber-brown, approaching to black. It is four feet in height, having the body and crupper of a small horse, and is covered with brown hair; the tail is furnished with long white hairs (like a horse), and on the neck is a beautiful flowing mane, white at the base, and black at the tips. Its horns, approximated and enlarged at the base, bowed outwardly, and turn up at the point; the muzzle is large, flat, and surrounded by a circle of projecting hairs; under the throat and dewlap is another black mane; and the legs are as light and slender as those of a stag. The Gnus inhabit the wild karoos of South Africa and

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the hilly districts, where they roam mostly in large herds, and migrate according to the season. They are naturally wild and difficult of approach; and when first alarmed, they fling up their heels and plunge about like a restive horse: they soon, however, take to flight, and traverse the desert with such astonishing celerity — not in a tumultuous mass, but in single file, following a leader—that they are quickly out of danger. When wounded they will sometimes turn upon the hunter and pursue him in turn, darting forwards on their assailant with amazing force and impetuosity, so that it requires the utmost coolness on his part to evade the attack. When taken young, this animal is easily domesticated.

GOAT. (*Capra hircus.*) The distinguishing characters in the genus *Capra* in the Linnæan system of Zoology are,—that the horns are hollow, turned upwards, and annulated on their surfaces; that there are eight cutting teeth in the lower jaw, and none in the upper; and that the male is generally bearded. In its domestic state the Goat is found in almost every part of the globe, bearing the extremes of heat and cold, and differing in size and form according to various circumstances; the horns generally having a curvature outwards towards the tips.

Buffon's account of this animal is strikingly descriptive. "The Goat," says he, "is superior to the sheep both in sentiment and dexterity. He approaches man spontaneously, and is easily familiarized. He is sensible of caresses, and capable of a considerable degree of attachment. He is stronger, lighter, more agile, and less timid than the sheep. He is a sprightly, capricious, wandering, wanton animal. It is with much difficulty that he can be confined, and he loves to retire into solitude, and to climb, stand, and even sleep, on rugged and lofty eminences. He is robust and easily nourished, for he eats almost every herb, and is injured by very few. His bodily temperament, which in all animals has a great influence on the natural disposition, is not essentially different from that of the sheep. These two animals, whose internal organization is almost entirely similar, are nourished, grow, and multiply in the same manner; and their diseases are the same, excepting a few, to which the Goat is not subject. The Goat fears not, like the sheep, too great a degree of heat. He cheerfully exposes himself to the sun, and sleeps under his most ardent rays without being affected with the vertigo or any other inconveniency. He is not afraid of rain or storms; but he appears to feel the effects of severe cold. The inconstancy of his disposition is marked by the irregularity of his actions. He walks, stops short, runs, leaps, approaches or retires, shows or conceals himself, or flies off, as if actuated by mere caprice, and without any other cause than what arises from an eccentric vivacity of temper. The suppleness of his organs, and the strength and nervousness of his frame, are hardly sufficient to support the petulance and rapidity of his natural movements."

The original stock of the Common Goat, as of other races of animals early subjugated by Man, cannot be distinctly traced; but it appears to be the same with that of numerous half-domesticated breeds, which abound in Asia. Mr. Bell, in his History of British Quadrupeds, remarks, that "most modern

zoologists who have paid much attention to the question, and who have brought to the consideration of it all the helps which recent discoveries in philosophical zoology have furnished, have leaned to the belief that the Ægagrus, or Wild Goat of the mountains of Caucasus and of Persia, is the true original stock. The zoological characters of this animal certainly bear a closer resemblance to those of the domestic breeds; and it is worthy of remark, that the horns of the Persian Domestic Goat, though smaller, are similar in form to those of the *Paseng* or *Ægagrus*. The arguments which have been urged from the intermixture of the *Ibex* with the Common Goat are at present of little value; as the facts recorded are very deficient. The large Goats which are reported to have been brought from the Alps and the Pyrenees to the Garden of Plants in Paris, and which were stated to have been wild, were probably the progeny of the *Ibex* with the Common Goat, as there is no proof of the existence of the true *Ægagrus* in Europe. These were found to be capable of producing offspring, and the details are given by Mr. Fred. Cuvier with great clearness; but the old fault still remains; the question is not set at rest by these observations: for we are only informed that they produce offspring, without any statement whether they will breed *inter se*, or only with the Common Goat. The progeny, however, were either prematurely brought forth, or lived only a short time in a sick and languishing condition."

"The condition of the Goat, in some parts of our own islands," says the same intelligent and accurate writer, "is much more wild than that of any other of our domestic animals. In the mountains of Wales especially the Wild Goats roam over the most inaccessible parts of the mountains and rocks, without the slightest appearance of domestication, or of having been deduced from a domestic stock. It is a hardy, active, powerful animal; capable of maintaining its footing on the smallest point on which its feet can possibly rest, and of taking considerable leaps with the utmost certainty of safely alighting, although the spot which it desires to attain be perhaps but the rugged point or ledge of a precipice. It will thus find its food in places inaccessible to almost all other animals, and live and thrive by cropping the scanty herbage which they furnish. In the mountain ranges of Europe, on the Alps and Pyrenees, the Goat is found at a great elevation, approaching as near the line of perpetual snow as it can find the scanty means of its sustenance; and it feeds on many plants which to other ruminants are distasteful, and even deleterious: thus, hemlock, henbane, and digitalis is eaten by it with impunity, and even the acrid euphorbia is not rejected."

The milk of the Goat is sweet, nutritive, and medicinal; this may be accounted for from the animal's food being chiefly derived from the heathy mountains and shrubby pastures, where sweet and aromatic herbs abound. In ancient times the skin of the Goat was regarded as a most useful article of clothing: it is still manufactured into the best Turkey or Morocco leather; while that of the kid (whose flesh is regarded as a delicacy) forms the softest and most beautiful leather for gloves, &c. The usual colour of the domestic Goat is black and white, or a pale reddish-brown, with a black stripe down the back; but sometimes brown, white, or spotted. In old males the beard is very long; and the horns, which are transversely rugose, bending outwards and falling back, are sometimes nearly three feet long.

We find that the Common Goat inhabits most parts of the world, either native or naturalized. It endures all kinds of weather, being found in Europe as high as Wardhuys, in Norway, where it feeds during the winter season on moss, the bark of fir trees, and even of logs intended for fuel. It is also asserted that they thrive equally well in the hottest parts of Africa and India. The odour of the Goat, which at all times is proverbially strong, is intolerably so in the rutting season (from September to November); but it is commonly believed that horses are refreshed by it, which accounts for this animal being often kept about stables. Upon this subject Mr. Bell observes, "Many persons keep Goats in their stables, from an idea that they contribute to the health of the horses; a fancy not perhaps so far-fetched or absurd as at first sight it might appear; for I believe that all animals are kept in better temper and greater cheerfulness by the presence of a companion than in solitude, and the active and good-humoured Goat may in this way really perform the benefit which has been attributed to it upon mistaken grounds;—indeed, instances of close attachment between the horse and the stable Goat are not unfrequent." The female goes five months with young, and usually produces two kids at a birth; sometimes, however, three, and occasionally but one.

The ANGORA GOAT (*Capra Angorensis*) is by far the most elegant of all the varieties of the Goat, and is a native of Angora, a small district of Asia Minor, and remarkable for producing not only this peculiar race of goats, but also sheep, cats, rabbits, &c., with hair of uncommon fineness. The Goat of Angora is generally of a beautiful silky-white colour, short legged, with black, spreading, spirally-twisted horns, and pendulous ears. Its chief and distinguishing excellence, however, is the wool, which covers the whole body in long pendent spiral ringlets; and it is from the hair of this animal that the finest camlets are made.

The CASHMERE GOAT, so highly prized for its fleece, is descended from the Goat of Thibet, which pastures on the Himalaya. It is smaller than the common domestic Goat, and has long, fine, silky wool. Thibet is situated at the northern descent of the Himalaya mountains, and Cashmere at the southern; hence there is some difference in the climate; it is observed, also, that the colder the region where the animal pastures, the heavier and finer is its fleece. The Goats which pasture in the highest vales of

Thibet are of a bright ochre colour; in lower grounds, the colour becomes of a yel-

CASHMERE GOAT.

lowish-white, and still further downwards entirely white. The highest mountains of the Himalaya inhabitable by man contain also a species of black Goats, the wool of which as a material for shawls in India obtains the highest price. The Goats of Thibet and Cashmere have the fine curled wool close to the skin, just as the under hair of our common Goat lies below the coarse upper hair. The flesh of the Cashmere Goat tastes as well as that of the common one; and its milk is as rich; but these animals owe their great celebrity to the extraordinary beauty and softness of the shawls for which the Asiatics have been so long famous.

The SYRIAN GOAT is remarkable for its large pendulous ears, which are usually from one to two feet in length, and sometimes so troublesome to the animal, that the owners are obliged to trim them, to enable it to feed more at ease. The horns are black, bending a little forwards; and are only about two inches long. The colour of its hair is like that of a fox; and there are two fleshy excrescences under its throat. This variety appears to have been known to Aristotle.

There are several other varieties of the Goat which it is needless to enumerate. But there is one species in North America (the ROCKY MOUNTAIN GOAT), which we should notice, inasmuch as it has given rise to much difference of opinion as to its proper place in a system of arrangement. It has been designated *Ovis montana*. The Rocky Mountain Goat nearly equals in size a common sheep, and has a shaggy appearance, in consequence of the protrusion of the long hair beyond the wool, which is white and soft. Its horns are about five inches long, conical, somewhat curved backwards, and projecting but slightly beyond the wool of the head. They are in great numbers about the head waters of the Columbia, and furnish the principal part of the food of the natives of that district. They appear to be more numerous on the western than on the eastern side of the mountains, and are rarely seen in the plains. The skin is very thick and spongy, and is principally used in making moccasins. Next to the fleece of the Cashmere Goat this is believed to be the finest; and it is prized accordingly.

GOAT-MOTH. [See CARDIA LIGNIPERDA.]

GOATSUCKER, or NIGHT-JAR. (*Caprimulgus Europæus*.) There are many species of Goatsuckers, but this is the only one of the genus that inhabits Europe permanently, the *Caprimulgus rufitella* being confined to South Western Europe, and appearing there only in the summer. With us it is only a summer visitant, appearing about the middle of May, and retiring in September or October. Before, however, we give a description of the bird, it may be as well to observe that the name Goatsucker, although very generally used, and retained in most ornithological works, has no foundation but in the ignorance and superstition of the ancients, who believed it sucked the teats of goats; on which account Jewish suggests the propriety of dropping the

NIGHT-JAR.—(*CAPRIMULGUS EUROPÆUS*.)

name, and adopting that of Nocturnal, "which, though not universally known, bears some analogy to the nature and qualities of the bird, both in respect to the time of its appearance, which is always the fall of the evening, as well as to the jarring noise it utters whilst at rest perched on a tree, and by which it is *peculiarly* distinguished." Like the Owl, it is seldom seen in the daytime, unless disturbed, or on dark and gloomy days, when its eyes are not dazzled by the bright rays of the sun. As moths, gnats, beetles, and other night insects are its food, it is peculiarly formed to enable it to catch them on the wing. For this purpose nature has bestowed on it a mouth of great comparative size, which as the Goatsucker flies, it can quickly open, while the insects are skilfully entrapped by the bill being surrounded on the lower side with a glutinous substance that prevents their escape. This manner of flying with its mouth open is the cause of that whirring noise which this bird makes while chasing its prey. It arises from the resistance made to the mouth by the air; and is more or less loud according to the velocity with which the bird moves. When

perched, it usually sits on a bare twig, with its head lower than its tail, and in this attitude, utters its jarring. It does not perch like other birds, sitting across the branch, but lengthwise, and its hinder toe is capable of being turned forward as well as backward. It is solitary in its habits, and is generally seen alone.

The colours of this bird, though plain, have a beautiful effect from the elegance of their disposition, the plumage being beautifully freckled, barred, and spotted with browns, black, grey, and ferruginous, variously arranged and diversified. The bill is small, flat, and hooked at the tip; the eyes are large, full, and black; the legs are short, rough, and scaly, and feathered below the knee: the toes are connected by a membrane as far as the first joint; the middle one is considerably longer than the rest, and the claw is serrated on one side. The use of this peculiar organ is not clearly ascertained; by some it is affirmed that the bird employs it to clear away the fragments of insects that may have clogged up the fringe of bristles; by others, that it strikes its prey with its foot, and that this long serrated claw enables it to hold the insect more securely; and by others again, that it uses it to clean its plumage. The male is distinguished from the female by an oval white spot, near the end of the first three quill-feathers. These birds frequent moors and wild heathy tracts abounding in fern; they make no nest, but the female deposits her eggs, which are of a dull-white colour, on the ground. Montbelliard, who wrote this bird's history for Buffon, states, that it no sooner perceives its retreat to be discovered by an enemy, than it carefully rolls its eggs to a more secure situation.

There are other species bearing the same general appellation; one of which is known in America as *Whip-poor-Will;* another as *Chuck-Will's-Widow*, a third as the *Nighthawk*, and a fourth as the *Rain-bird*. There are also the *Banded Goatsucker*, and *Crested Goatsucker*, natives of New Holland; besides several inhabiting various parts of India, Africa, &c. These are placed in different genera: for descriptions of figures of which we refer our readers to the works of Mr. Gould, and of Messrs. Gray and Mitchell. The two first-mentioned we shall here describe, from Wilson.

WHIP-POOR-WILL. (*Caprimulgus* [*Antrostomus*] *vociferus.*) The notes of this solitary and celebrated bird, when first heard in the spring, at evening twilight or morning's dawn, seem like the voice of an old friend, and are listened to by almost all with great interest. At first they issue from some retired part of the woods, the glen, or mountain; in a few evenings, perhaps, we hear them from the adjoining coppice, the garden fence, the road before the door, and even from the roof of the dwelling-house, long after the family have retired to rest. He soon becomes a regular sequaintance. Every morning his shrill and rapid repetitions are heard from the adjoining woods; and when two or more are calling out at the same time, as is often the case in the pairing season, and at no great distance from each other, the notes, mingling with the echoes from the mountains, is really surprising. Their notes seem pretty plainly to articulate the words which have been generally applied to them, *Whip-poor-*

WHIP-POOR-WILL.
(CAPRIMULGUS VOCIFERUS.)

Will, the first and last syllables being uttered with great emphasis, and the whole in about a second to each repetition; but when two or more males meet, their whip-poor-will altercations become much more rapid and incessant, as if each were straining to overpower or silence the other. When near, you often hear an introductory cluck between the notes. At these times, as well as at almost all others, they fly low, not more than a few feet from the surface, skimming about the house and before the door, alighting on the wood-pile, or settling on the roof. Towards midnight they generally become silent, unless in clear moonlight, when they are heard with little intermission till morning. If there be a creek near, with high precipitous heathy banks, they are sure to be found in such situations. During the day they sit in the most retired, solitary, and deep-shaded parts of the woods, generally on high ground, where they repose in silence. When disturbed, they rise within a few feet, sail low and slowly through the woods for thirty or forty yards, and generally settle on a low branch or on the ground. Their sight appears deficient during the day, as, like owls, they seem to want that vivacity for which they are distinguished in the morning and evening twilight. They are rarely shot at or molested; and from being thus transiently seen in the obscurity of dusk, or in the deep umbrage of the woods, no wonder their particular markings of plumage should be so little known, or that they should be confounded with the Night-hawk, whom in general appearance they so much resemble. The female begins to lay about the second week in May, selecting for this purpose the most unfrequented part of the wood, often where some brush, old logs, heaps of leaves, &c. had been lying, and always on a dry situation. The eggs are deposited on the ground, or on the leaves, not the slightest appearance of a nest being visible. These are usually two in number, in shape much resembling those of the Night-hawk, but having the ground colour much darker, and more thickly marbled with dark olive.

The Whip-poor-Will is nine inches and a half long, and nineteen inches in extent; the bill is blackish, a full quarter of an inch long, and bent a little at the point, the under mandible arched a little upwards; the nostrils are prominent and tubular, their openings directed forward; the mouth is extravagantly large, of a pale flesh colour within, and beset along the sides with a number of long, thick, elastic bristles, which end in fine hair, and curve inwards; these seem to serve as feelers; and prevent the escape of winged insects; the eyes are very large, full, and bluish black; the plumage above is so variegated with black, pale cream, brown, and rust colour, sprinkled and powdered in such minute streaks and spots, as to defy description; the upper part of the head is of a light brownish gray, marked with a longitudinal streak of black, with others radiating from it; the back is darker, finely streaked with a less deep black; the scapulars are very light whitish ochre, beautifully variegated with two or three obsolete streaks of very deep black; the tail is rounded, the three outer feathers on each side are blackish brown for half their length, then pure white to the tips; the deep brown of these feathers is regularly studded with light brown spots; the four middle ones are whitish at the ends, but beautifully marked with herring-bone figures of black and light ochre finely powdered. The cheeks and sides of the head are of a brown orange colour; the wings, when shut, reach scarcely to the middle of the tail, and are elegantly spotted with very light and dark brown; chin black, streaked with brown; a narrow semilunate of white passes across the throat; breast and belly irregularly mottled and streaked with black and yellow ochre, legs and feet light purplish flesh colour, covered with white; the former feathered before, nearly to the feet; the two exterior toes are joined to the middle one, as far as the first joint, by a broad membrane; and the lower edge of the middle claw is pectinated, and therefore probably employed as a comb to rid the plumage of its vermin. The bristle is about an inch long in being much lighter on the upper parts. Their food appears to be large moths, grasshoppers, ants, and such insects as frequent the bark of old trees; they are also fond of dung beetles; they are also expert in darting after winged insects. They will sometimes skim in the dusk, within a few feet of a person, uttering a kind of chattering as they pass. In their migrations north, and on their return, they appear only one, and a day or two at some of their haunts, and do not advance in one regular body, as the Wood-thrush, like the owl and other nocturnal flyers, is regarded with a kind of superstitious awe by the weak-minded and monstrous. "Night," says Wilson, "a whole of this complexion, brings with it its whole train of apparitions, strange and wonderful sights; and this solitary wakeful bird, being a frequent wanderer at those hours of ghosts and hobgoblins, is considered by the Indians as being, by habit and nature, little better than one of them.

The Chuck-Will's-Widow. (*Caprimulgus Carolinensis.*) This species is twelve inches long, and twenty-six in extent; bill yellowish, tipt with black; the sides of the mouth are armed with numerous long bristles, strong, tapering, and furnished with finer hairs branching from each; cheeks and chin rust colour, speckled with black; over the eye extends a line of small whitish spots; head and back very deep brown, powdered with rust and cream colour, and marked with long ragged streaks of rust and black; scapulars broadly spotted with deep black, bordered and in-

CHUCK-WILL'S-WIDOW.
(CAPRIMULGUS CAROLINENSIS.)

tersperced with a creamy white; the plumage of that part of the neck which falls over the back is long, something like that of a cock, and streaked with yellowish brown; wing quills barred with black and bright rust; tail rounded, extending about an inch beyond the tips of the wings; the middle feathers being powdered with various tints of ferruginous, and large herring-bone fine zig-zag lines, and exterior edges of the three figures of black; exterior edges of the three outer feathers barred like the wings, their interior vanes being pure snowy white, marbled with black; across the throat is a slight whitish band; breast black, powdered with rust; belly and vent lighter; legs feathered before nearly to the feet, which are of a dirty purplish flesh-colour.

The Chuck-Will's-Widow, whose notes seem exactly to articulate these words, commences his singular call generally in the evening, soon after sunset, and continues it, with short occasional interruptions, for several hours. This note, or call, instantly attracts the attention of a stranger, and is strikingly different from that of the Whip-poor-Will. In sound and articulation it seems plainly to express the words which have been applied to it (*Chuck-Will's-Widow*), distinctly, putting the principal emphasis on the last word. In a still evening it may be heard at the distance of nearly a mile, the tones of its voice being stronger and more full than those of the Whip-poor-Will, who utters his with much greater rapidity. The flight of this bird is low, skimming about at a few feet above the surface of the ground, frequently settling on old logs, or on the fences, and from thence sweeping around, in pursuit of various winged insects that fly in the night. Like the Whip-poor-Will, it prefers the declivities of glens and other deeply shaded places, making the surrounding mountains ring with echoes the whole

evening. The Chuck-Will's-Widow lays its eggs, two in number, on the ground, in the woods; they are of a dull olive colour, sprinkled with darker specks, and about as large as a pigeon's.

This singular genus of birds, formed to subsist on the superabundance of nocturnal insects, are exactly and surprisingly fitted for their peculiar mode of life. Their flight is low, to accommodate itself to their prey; silent, that they may be the better concealed, and sweep upon it unawares; their sight, most acute in the dusk, when such insects are abroad; their evolutions, something like those of the bat, quick and sudden; their mouths capable of prodigious expansion, to seize with more certainty, and furnished with long branching hairs, or bristles, serving as palisadoes to secure what comes between them. Reposing so much during the heats of day, they are much infested with vermin, particularly about the head, and are provided with a comb on the inner edge of the middle claw, with which they are often employed in ridding themselves of these pests, at least when in a state of captivity. Having no weapons of defence except their wings, their chief security is in the solitude of night, and in their colour and close retreats by day; the former so much resembling that of dead leaves, of various hues, as not to be readily distinguished from them even when close at hand. [See Night-hawk.]

GOBIOIDEÆ. A family of Acanthopterygious fishes, including the Blennies, Gobies, &c. They may be recognised by the slenderness and flexibility of their dorsal rays. They have an uniformly wide intestinal canal, and no pyloric cæca.

GOBY. (*Gobius.*) A genus of Acanthopterygious fishes, of which there are several species, of a small size, in general varying from three to six inches in length; but none of them are much esteemed for food. They are distinguished by their ventral and thoracic fins being united in their whole length, or at their bases. The spines of the dorsal

Red Goby.—(Gobius cruentatus.)

fins are flexible; the openings of their ears, with four rays. Like the Blenny, they can live a long time out of water. Several species are found in the Mediterranean, American, and Indian seas; some also on our own coasts. Three or four will suffice for examples.

The Black Goby, or Rock-fish. (*Gobius niger.*) This is an inhabitant of the Mediterranean and Northern seas, and also of the rocky parts of our own coast: it grows to the length of six inches; the body is soft, slippery, and slender; the head large, the cheeks inflated, and the lips very thick; the mouth is wide, and furnished with numerous small teeth in each jaw, the lower of which is the longest. The ventral fins coalesce, and form a sort of funnel, by which these fish are said to affix themselves immovably to the rocks. The general colour of the fish is a dusky black, and the tail is rounded at the end.

The Lance-tailed Goby (*Gobius hastatus*) is distinguished by and named from the peculiar form of its tail, which is large in proportion to the fish, and sharp-pointed at the tip. The body is of a lengthened shape, and nearly of equal diameter throughout: the head is oblong, and truncated in front; the jaws of equal length, and armed with sharp teeth; and the body is covered with scales, those toward the tail being much larger than those on the upper parts. This is a West Indian species.

The Blue Goby (*Gobius cœruleus*) is a highly beautiful, though very small species: colour fine blue, rather paler beneath; tail red, with a black border. From the brilliancy of its colours it appears, when swimming in a calm sea, during a bright sunshine, like a small tube of sapphire, tipped with carbuncle. It is found on the eastern coasts of Africa; and the Negroes use it as a bait for other fish.

The Spotted Goby (*Gobius ocellatus*) is about three inches long; the head is large; the irides blue; the mouth wide, with several rows of small pointed teeth, curving inwards; the dorsal fins distinct, pectoral and ventral fins large; tail a little rounded. The general colour is a pale yellowish-white, freckled with minute light brown specks, and occasionally a row of larger spots along the lateral line. It is frequently taken on our sandy shores in shrimpers' nets; it is also plentiful in the Thames, where it is called by the fishermen Polewig, or Pollybait.

GODWIT. (*Limosa.*) There are several species of these Grallatorial birds. They are a timid, shy, and solitary tribe; characterised by a straight beak, longer than that of the snipes, sometimes slightly bent at the extremity, and by long legs, naked far above the knee. They live amidst the fens, salt marshes, and deep muddy places near the mouths of rivers; seldom remaining above a day or two in the same place, and often removing suddenly in a flock at night, when they fly very high. When pursued, they run with great speed, and scream as they rise. They subsist on worms and larvæ, and their flesh is very excellent. They are migratory, and moult twice in the year.

The Common Godwit (*Limosa Ægocephala*) is sixteen inches in length, and weighs about twelve ounces. The bill is four inches long, bent a little upwards, and black at the point: the head, neck, back, scapulars, and coverts are a dingy reddish pale brown, each feather being marked down the middle with a dark spot. The fore part of the breast is streaked with black; belly, vent, and tail white, the latter barred with black; the webs of the first six quill-feathers black,

n the interior sides with reddish legs inclining to greenish blue. In ng and summer the Godwit resides fens and marshes, where it rears its but when the winter sets in with , it seeks the salt-marshes and sea-

RED GODWIT. (*Limosa rufa.*) This s not very common in Great Britain, und in the north of Europe, and is entiful in the fenny parts of North , about Hudson's Bay, &c. It is han the Common Godwit, and is ished from it by the redness of its ; the head, breast, and sides being t ferruginous red, streaked on the th brown, and marbled on the breast s with dusky, cinereous, and white ; ain dull rusty red. The back, sca- greater and lesser coverts, are greyish on the former, some of the feathers ed and streaked with black and ru- ped with pale reddish white ; and a white is formed across each wing by of the greater coverts. The under e white, slightly spotted with brown. s are dusky, and bare considerably he knees. Its flesh is reckoned de-

are also the Great American God- Cinereous Godwit, the Black-tailed the Red-breasted Godwit, &c., all r less resembling the species above d.

DEN-EYE [BUTTERFLY]. The iven by collectors to Butterflies of the *Hipparchia pamphilus.*

DEN WASPS, or GOLDEN- D FLIES. (*Chrysis.*) The popular for a tribe of Hymenopterous insects, n the richness of their colours are said with the Humming-birds." They may rved walking, but in a constant agita- d with great agility, upon walls and exposed to the heat of the sun. e also found upon flowers. The body ated and covered with a solid skin ; d wings are not veined, but the ovi- is formed by the terminal segments abdomen, and terminated by a small the antennæ are filiform, elbowed, beatile. The abdomen, which in the appears to be formed of only three r segments, is flattened or vaulted , and capable of being folded against rest, when the insect assumes an ar form. They deposit their eggs in ns of Solitary Mason-bees, or other optera, their larvæ destroying those insects. [See CHRYSIDIDÆ.]

DFINCH. (*Fringilla carduelis.*) Of British Finches, none equal the Gold- brilliant plumage and docility ; hence of those most frequently kept in cap- the though its song is soft and pleas- is deficient in power. Its length, s tip of the bill to the end of the five inches and a half ; and the t expansion of its wings is nine The bill is white, tipped with black ; the forehead and chin a rich scarlet, which is divided by a black line passing from each corner of the bill to the eyes ; the cheeks are white ; top of the head black, that colour extending downward from the nape on each side ; the back, rump, and breast are of a fine pale tawny brown colour ; belly white ; the wings and tail are black, but the points of the primaries in both are white ; a beautiful yellow stripe runs across the wings ; the tail feathers are black, with a white spot on each near the end ; legs pale flesh red. The male is distinguished from the female by the feathers on the ridges of the wings, which are of a deep black colour ; while those of the hen are a dusky brown ; and the black and yellow in the wings of the latter are less brilliant than in those of the male. The nest of the Goldfinch is small, but ex-

GOLDFINCH.—(FRINGILLA CARDUELIS.)

tremely beautiful ; the outside consists of very fine moss curiously interwoven with wool, hair, and other materials ; and the inside is lined with the down of thistles and other soft and delicate substances. The nest is often found in an orchard, large garden, or plantation, in an apple or pear tree, or carefully placed in some thick evergreen shrub—somewhere in the neighbourhood of Man, but not immediately within his view. The bird lays five or six white eggs, marked with deep purple spots at the larger end. They feed their young with caterpillars and insects ; and the old birds feed on various kinds of seeds, particularly those of the thistle, dandelion, and groundsel.

Goldfinches are more easily tamed than other birds ; and so reconciled will they in time become to their imprisonment in cages, that they appear as if in reality attached to them. If a young Goldfinch is brought up under a canary, a wood-lark, or any other singing-bird, it will readily catch their song. Goldfinches breed with the Canary ; this intermixture, says Bewick, succeeds best between the cock Goldfinch and the hen Canary, whose offspring are productive, and are said to resemble the male in the shape of the bill, and in the colours of the head and wings, and the hen in the rest of the body. Beauty of plumage, observes Buffon, melody of song, sagacity, and docility of disposition, seem all united in this charming little bird, which were it rare, and imported from a foreign country, would be more highly valued.

GOLD-FISH. (*Cyprinus auratus.*) In the fresh waters of China, we are told, certain beautiful species of *Cyprinus*, distinguished for the splendid golden colour of the membrane lying immediately beneath the scales, are as frequent as the most common river fish are here. Nor, indeed, are they at this time either rare or uncommon in our own ponds, being quite naturalized, and breeding freely in open waters.

The colours of Gold-fish are liable to the greatest variations: some are marked with a fine blue, brown, or bright silver hue, but the usually predominant colour is that of a brilliant gold. As an article of food they are not used, and are only valued for their beauty and gentleness.

GOLIATHUS (Goliath Beetles). A group of Lamellicorn Coleoptera, which are chiefly found in Africa, the largest species being indigenous to the western coasts. These insects, which were formerly very scarce, and some of which are still rare in collections, have acquired their name from the large size of some of the species. One of the first specimens was found by Mr. Ogilvie, surgeon of H. M. S. Renown, at least eighty years ago. The specimen was dead, and found floating in the river Gaboon; it is now in Glasgow, in the Hunterian Museum.

MALE CACIQUE GOLIATH BEETLE
(GOLIATHUS CACICUS.)

The fine species figured above was believed, by its describer, Voet, to be a native of South America, and hence he called it *Cacicus*, after the native chiefs of that country.

The male differs from the female in the armature of the head and in the structure of the fore-legs, which are spineless on the outside, as is well shown in the figure.

The elytra of the male of the Goliathus Cacicus, are of a pearly satiny white, with a black opaque spot on the shoulder; the crown of the head and the thorax being of a tawny yellowish brown, with black longitudinal bands on the latter.

FEMALE CACIQUE GOLIATH BEETLE
(GOLIATHUS CACICUS.)

These insects are said to be roasted and eaten by the natives, who doubtless often make a *bonne bouche* of what would gratify many an entomologist.

The males of these insects, we are informed by Dr. Savage, are much more numerous than the females; and though the various species of the group cannot be said to be very abundant, yet they are so frequently brought over now, that the large prices of 30*l.* and even 50*l.*, which used to be asked for them, are now very much reduced; fine specimens, however, of some of the species still fetch 5*l.* or 6*l.*

Separated from them by slight generic characters, are two other groups, a male and female of one of which are figured beneath.

MALE POLYTHEMUS BEETLE.
(GOLIATHUS POLYTHEMUS.)

It is the Goliathus (Mecynorhina) Polythemus, of a dark green colour, banded and spotted with white. The male and female are very similarly marked, but the

ctions in the head and fore leg may be ly seen in the figures. The female of species is generally regarded also as

FEMALE POLYPHEMUS BESTLE.
(GOLIATHUS POLYPHEMUS.)

racer than the male. This species, as as one named after Dr. Savage by Harris of Boston, feeds upon a vine that s over very lofty trees. The insects d the bark of the vine, and extract the the vine being full of a fluid as taste- nd limpid as water.

re are several other genera and species liath Bestles, of most of which there ecimens in the collection of the British um; but we must refer our readers to orks of Dr. Burmeister and Mr. West- for descriptions and figures of these, ng quite out of the scope of this work rticularize them, splendid as they are. of all the species of *Cetonidæ* (includ- he Goliath), with reference to figures, een published, and will show how rich Museum collection is.

e next species (figured beneath) is from Africa also, and is of a most brilliant colour; it is the GOLIATHUS (DICRO- NA) MICANS. The shades on this s vary according as the insect is held e light.

SLIPPERING GOLIATH BESTLE.
(GOLIATHUS MICANS.)

This insect seems to be a native of Senegal and the Calabar coast.

The food of the Goliaths is fluid, like that of the *Cetonia* and *Trichii*; the long brushes on their maxillæ, and the diverging rows of hairs that line their lower lips, are admirably fitted for absorbing liquid food, while their horny teeth afford these beetles additional means of obtaining it from the leaves and juicy stems of plants when the blossoms have disappeared. "Thus every new discovery in Natural History, when least expected, serves to increase the evidence of skilful contrivance and perfect adaptation of structure in all organised beings." With this admirable remark of Dr. Harris we conclude this article. [See CETONIADÆ: DICRONOCEPHALUS: INCA.]

GOLLACH. [See EARWIG.]

GONEPTERYX. A genus of diurnal Lepidoptera, so named from its angled wings. The British species is found with very slight variation on the Himalaya mountains; it is the

GONEPTERYX RHAMNI, or BRIMSTONE BUTTERFLY. This gay and lively-coloured insect is one of the earliest among the Papilionidæ that makes its appearance; sometimes, in favourable weather, even as early as the middle of February. Mr. Knapp, in his Journal of a Naturalist, alludes to this butterfly:—

"The very first butterfly that will
——'aloft repair,
And sport and flutter in the fields of air,'

is the Sulphur Butterfly (*Gonepteryx rhamni*), which in the bright sunny mornings of March we so often see under the warm hedge, or by the side of some sheltered copse, undulating and vibrating like the petal of a primrose in the breeze." As the spring advances they may be seen on the wing in the woods, meadows, and commons, in tole-

BRIMSTONE BUTTERFLY
(GONEPTERYX RHAMNI.)

rable plenty; and as there is a second brood which comes forth about August, there is no lack of them at any time till autumn summons them away. The male is of a pure sulphur-yellow above, and the female of a greenish-white; and in both sexes a small spot of orange occupies the centre of each wing, and a dusky spot at the base: the abdomen is black above and yellow beneath, its base and the thorax thickly clothed with long glossy white silken hairs: the legs are white; the antennæ reddish. The caterpillar is green, with a paler line on each side of the belly, and very small scale-like black

back. It feeds on the buckthorn (*cathartica*). The pupa, or chrysalis, very gibbous in the middle, ...ated before; it is vertically suspended in a perpendicular branch, with a ...en thread round it.

...OPLAX, or ANGLED CRAB. A ...of decapod short-tailed Crustacea, of ...one species is found in this country; ...the *G. angulata* of authors, the young ...ich has been described as a species of ...simus. In the male the fore legs are ...long. For figures of this species see ...Leach's work, or that of Professor Bell, ...The British Crustacea."

...GOOSE. A genus of webfooted birds. The ...ommon WILD GOOSE (*Anser ferus*), otherwise called the GREY LAG GOOSE, being the origin of our domestic species, we shall describe it first in order, after having made a few observations on the distinguishing characters of the genus. The bill is the first great distinction of the Goose kind from all the feathered tribes. In other birds it is round and weged-shaped, or crooked at the end; in all the Goose kind it is flat and broad, formed for the purpose of skimming ponds and lakes of the mantling weeds which grow on their surface. The bills of other birds are composed of a horny substance throughout, formed for piercing or tearing; but birds of this genus have their inoffensive beaks sheathed with a skin which entirely covers them; and are only adapted for shovelling up their food, which is chiefly confined to vegetable productions; for though they do not reject animal food when offered to them, they contentedly subsist on vegetable, and seldom seek any other.

The GREY LAG, or COMMON WILD GOOSE, as Pennant remarks, is our largest species; the heaviest weigh ten pounds; the length is two feet nine inches; the extent five feet. The bill is large and elevated, of a flesh colour tinged with yellow; the nail white

WILD GOOSE.—(ANSER FERUS.)

the head and neck cinereous, mixed with ochraceous-yellow; the hind part of the neck very pale, and at the base of a yellowish-brown; the breast and belly whitish, clouded with gray or ash-colour; the back ...y, the lesser coverts of the wings almost ... middle row deep cinereous slightly ... the primaries gray, tipped ... with white; the ...

coverts of the tail and the vent feathers of a pure white; the breast and belly crossed and clouded with dusky and ash on a whitish ground; the middle feathers of the tail dusky, tipped with white; the extent ones almost wholly white; the legs of flesh-colour. This species is widely numerously spread over all the more ... erly parts of the globe, whence some ... of them migrate a long way southward the winter. Latham says, they seem general inhabitants of the world,—... with from Lapland to the Cape of Hope,—are frequent in Arabia, Persia, China, as well as indigenous to ... and on the American continent from son's Bay to South Carolina. As summer residences and breeding-... lakes, swamps, and dreary ... Siberia, Lapland, Iceland, and ... quented northern regions of Am... set apart for that purpose, when ... titudes of other kinds, in undis... rity, they rear their young, ... provided with a variety of fo... tion of which must consist o... gnats, which swarm in those ... myriads of insects that are ... unsetting sun.

These birds are often ... or a hundred, flying at ... and preserving very great ... motions; sometimes form... and at others assuming ... which is supposed to fac... Their cry is frequently ... at an imperceptible dist... on the ground, they ... line, after the manner ... to have descended ra... than for any other ... continued in this ... two, one of them, ... sounds a kind of ... punctually attend... they pursue the ... alacrity.

Their flight is ... regularity; they ... line abreast, o... angle at the ... this order the ... turns, the for... when tired, ... ing to his d... high that ... them from ... this can be ... one discha... bird. The ... ing corn ... alight in ... tries the ... nets, ... geese ... schem... they ... time ... nigh... and ... ev...

parts of Great Britain; the drain-
ultivation of these marshy districts
however, nearly depopulated them
former feathered inhabitants; but
the wild races, these localities are
ing with domesticated ones in a
proved condition. The Wild Goose
six to eight, sometimes ten or a
, of a dirty greenish colour, the
placed among rushes, heaths, &c.

ME GOOSE. The wild species we
described is, as before stated, the
of the domesticated Goose; to
whose varied plumage, economy,
, may to many seem a superfluous
ile others, to whom they are less
n, may deem the account suffi-
nteresting. How long they have
alized from their original in-
n is not easily ascertained; but
must have been very remote, for
ery distant date they appear to
d their present station, to have
t for the self-same purposes, and
een treated in the same manner.
dominant colours are white and
shades of ash and brown: some
are yellowish, others dusky, and
found to differ very little in
n from the original stock. The
nanent mark, which all the gray
retain, like those of the wild kind,
ns ring which surrounds the root
ll. They are generally furnished
all tuft on the head; and the most
ne of the males (the Ganders) is
; the bills and feet in both males
ies are of an orange red. By studied
in the breeding, two sorts of these
ve been obtained—a larger and a
rt; the former weighing from ten
ds of fifteen pounds, and frequently
rs. The smaller kind are more

each female upon her own nest as soon as she returns. At length the brood is hatched; and as soon as they are able to follow their parent Geese, they are driven to the neighbouring fens and marshes, on whose grassy-margined pools they feed and thrive without requiring any further attendance until the autumn. In this way immense numbers are reared in many parts of this country; but nowhere are there so many as in the fens of Lincolnshire, where it is said to be no uncommon thing for a single person to keep a thousand old Geese, each of which, on an average, will bring up seven young ones. So far those only are noticed which may probaperly be called the larger flocks, by which particular watery districts are peopled; but it must be borne in mind that they form only a part of the large family: and when the stock of the various farm-yards throughout the kingdom are added, the immense whole will appear multiplied in a ratio almost incalculable. A great part of those which are left to provide for themselves during the summer, in the solitary distant waters, as well as those which enliven the village green, are put into the stubble fields after harvest, to fatten on the scattered grain, while some are penned up for this purpose; and at length vast numbers are driven in flocks, or otherwise sent, to the great mart and focus of consumption, London; the provincial towns throughout the kingdom being also furnished with an adequate supply.

The Tame Goose lays from seven to twelve eggs, and sometimes more: these are carefully divided among the brood Geese when they begin to sit: those which lay a second time in the course of the summer are seldom, if ever, permitted to have a second hatching; but the eggs are used for household purposes. It is universally believed that the Goose lives to a great age, and particular instances are recorded by ornithologists which confirm

twenty-three indentations, or strong teeth, on each side: the inside or concavity of the upper mandible has also seven rows of

SNOW GOOSE.—(ANSER HYPERBOREUS.)

strong projecting teeth; and the tongue, which is horny at the extremity, is armed on each side with thirteen long and sharp bony teeth. The upper mandible of the beak is bright red, the lower whitish; the hooks of both blue. The head, neck, and body are pure white: the quills are white for half their length, the rest black: the legs are of a very deep red. These birds inhabit the regions of the arctic circle, occasionally migrating to the more temperate climates of Prussia, Austria, Hudson's Bay, and the United States of America. They arrive in the River Delaware from the north early in November, sometimes in considerable flocks, and are very noisy: their note is more shrill than that of the Canada Goose. They make but a short stay in winter, proceeding farther south as the severity of the weather increases; and early in the spring they retire to the polar regions, to perform the duties of incubation and rearing their young. Their flesh is esteemed excellent; and in Siberia they form an essential article of subsistence to the natives, each family, it is said, preserving thousands annually.

The method adopted by the Siberians to obtain these Geese is highly curious. According to Pennant's account, they place near the banks of the rivers a great net in a straight line, or else form a hovel of skins sewed together: this done, one of the company dresses himself in the skin of a white rein-deer, advances towards the flock of Geese, and then turns backwards (on all fours) the net or hovel: and his companions go behind the flock, and, by making a noise drive them forwards. The simple birds mistake the man in white for their leader, and follow him within reach of the net, which is suddenly pulled down, and thus captures the whole. When he chooses to conduct them even into the hovel, they follow in the same manner; he creeps in at a hole left for that purpose, and out at another on the opposite side, which he closes up. The Geese follow him through the first, and as soon as they are in, he passes round and secures every one of them.

The CANADA GOOSE, or CRAVAT GOOSE. (*Anser Canadensis.*) This is the common Wild Goose of the United States, and is known in every part of the country. It usually weighs about ten pounds. The general colour is a dark ash; head, neck, and tail black; cheeks and throat white; bill and feet black. In their annual migrations to the north, it is the general opinion that they are on their way to the lakes to breed; but, as Wilson observes, it is highly probable that they extend to the utmost polar point, amid the silent desolation of unknown countries, shut out from the prying eye of man by everlasting and insuperable barriers of ice. After having fulfilled the great law of nature, the approaching rigours of that dreary climate oblige them to return towards the more genial regions of the south; and no sooner do they arrive among man, than an indiscriminate slaughter of them commences. The people at Hudson's Bay greatly depend on these birds, and, in favourable seasons, kill three or four thousand, which are packed up for future use. The autumnal flight lasts from the middle of August to November; the vernal from the middle of April to the middle of May. Their mode of flying, the van being headed by an experienced old Gander, resembles that of the common Wild Goose before described. The Canada Goose generally builds its nest on the ground; but some pairs occasionally breed on the banks of large rivers on trees, depositing their eggs in the deserted nests of ravens or fishing-eagles. The eggs, six or seven in number, are of a greenish white. The bird has been long domiciled in this country, where it breeds freely, and is a great ornament.

CANADA GOOSE.—(ANSER CANADENSIS.)

That most entertaining naturalist, Mr. Waterton, thus speaks of the Canada or Cravat Goose. "The fine proportions of this stately foreigner, its voice, and flavour of its flesh, are strong inducements for us all to hope that, ere long, it will become a naturalised bird throughout the whole of Great Britain. I stop not to give a detailed description of its plumage; that has already been performed by many able hands. Suffice it then to say, that its beautiful black neck and white cheeks render it so particularly conspicuous, that those who have seen it

ow rising aloft, now dropping
, with such notes of apparent
y, as cannot fail to attract the
those who feel an interest in
Nature's wildest scenery."
ards relates the following in-
:—"On my return from Italy
of 1841, the keeper informed
preceding spring, one of the
ganders, accompanied by an
oose, had come on the island
ision stands, and formed a
the border of a flower-bed
ouse; that the female had
it, and that all these eggs
addle. I could easily con-
ter part of his information
eggs: but had he told me
-tax is a blessing, and that
is an honour to the country,
adily have believed him,
nada Goose had been fool
herself with a Bernacle
believe the man persisted
e had affirmed, and I told
e, and nobody believed me.
season, however, of 1842,
Gander and magnificent
on the island; and as the
had occupied on the pre-
very bleak and quite un-
ht that I could offer them
ss situation. Just opposite
ws of the sitting-room, and
yards distant from them,
the remnant of a once superb
-heart cherry-tree. It was
e prime in the days of my
I can well remember that
enderous loads of dainty
cherry-tree, like the hand
ing a description of it, ap-
for wear; and the wintry
ss half a century have too

was performing her tedious task. If any body approached the place, his cackling was incessant: he would run at him with the fury of a turkey cock; he would jump up at his knees, and not desist in his aggressions until the intruder had retired. There was something so remarkably disproportionate betwixt this goose and gander, that I gave to this the name of Mopsus, and to that the name of Nisa; and I would sometimes ask the splendid Canadian Nisa, as she sat on her eggs, how she could possibly have lost her heart to so diminutive a little fellow as Bernacle Mopsus, when she had so many of her own comely species present, from which to choose a happy and efficient partner. The whole affair appeared to be one of ridicule and bad taste; and I was quite prepared for a termination of it, similar to that of the two preceding years, when behold! to my utter astonishment, out came two young ones, the remainder of the five eggs being addle. The vociferous gesticulations and strutting of little Mopsus were beyond endurance, when he first got sight of his long-looked-for progeny. He screamed aloud, whilst Nisa helped him to attack me, with their united wings and hissings as I approached the nest in order to convey the little ones to the water; for the place at which the old birds were wont to get upon the island lay at some distance, and I preferred to launch them close to the cherry-tree; which done, the parents immediately jumped down into the water below, and then swam off with them to the opposite shore. This loving couple, apparently so ill-assorted and disproportionate, has brought up the progeny with great care and success. It has now arrived at its full growth, and is in mature plumage. These hybrids are elegantly shaped, but are not so large as the mother, nor so small as the father, their plumage partaking in colour with that of

them. I certainly acted rashly, notwithstanding appearances, in holding this faithful couple up to the ridicule of visitors who accompanied me to the spot where the novel incubation was going on. I have had a salutary lesson, and shall be more guarded for the future in giving an opinion. Information is always desirable, and is doubly satisfactory when accompanied by a demonstration. In the present instance, my speculation that a progeny could not be produced from the union of a Bernacle gander with a Canada goose has utterly failed. I stand convinced by a hybrid, reprimanded by a gander, and instructed by a Goose." [See BERNACLE.]

The SWAN GOOSE. (*Anser cygnoides.*) This bird is of a size between the Swan and the common Goose, and is distinguished from other species by its upright and stately walk, by having a large knob on the base of the upper mandible, and a sort of wattle under the throat; a white line or fillet runs over the front of the brow, and a black stripe down the hinder part of the neck: the base of the bill is orange; the front of the neck and breast are yellowish-brown; the back, and all the upper parts, darkish-gray; the sides gray edged with white; belly white; and legs orange. It is variously called the Chinese, Spanish, Guinea, Cape, and Swan Goose: and is said to have been originally found only in Guinea, though it is now tolerably common, in a wild as well as a domesticated state, both in warm and in cold climates. They are more noisy than any other species: nothing can stir by night or day without their sounding the alarm by their hoarse cacklings and shrill cries. They breed with the common Goose, and their offspring are as prolific as others.

The BEAN GOOSE (*Anser segetum*) is a native of the Arctic regions, migrating periodically towards the southern parts of Europe. They arrive in the fens of England in the autumn, sometimes in large flocks, and leave us in April and May for the north; some retiring no further to breed than the Hebrides. They resort equally to the corn fields and the fens, and are said to show a preference for the green corn as food. The head and top of the neck, back, and wing-coverts are ashy-brown; the base of the neck and under parts of the plumage are bright ash-colour; the rump is nearly black; the vent and under part of the tail are pure white; and the legs are reddish-orange. They lay ten or twelve white eggs, in a nest placed in the marshes, or among the heath.

GORGONIA: GORGONIADÆ. A genus and family of Zoophytes, described in Dr. Johnston's excellent work on the British Zoophytes as "polype-mass rooted, arborescent, consisting of a central axis barked with a polyparous crust; the crust when recent soft and fleshy, when dried porous and friable." The species here figured (*Gorgonia verrucosa*) is somewhat fan-shaped, much and irregularly branched, the branches *cylindrical*, flexuous, and barked when dry *with a white* warted crust. It is found in deep water, and is abundant along the whole of the south coast of England. "The polype-mass is more than twelve inches in height, and fifteen or seventeen in breadth, fixed to rocks by a broad circular fibro-corneous disc, shrub-like, branched from near the

WARTY GORGONIA. —(GORGONIA VERRUCOSA.)

base, the branches expanded laterally, sometimes bushy, cylindrical, erect or erecto-patent, warty. Axis black, smooth, and somewhat glossy, round or a little compressed, compact and corneous, with a snow-white pith in the centre, irregularly cellular and very like the pith of a rush. Crust, in dried specimens, white, cretaceous, friable, warted, with numerous polype-cells and wrinkled in the small spaces between them." Professor E. Forbes, alluding to another species (*Gorgonia flabellum*), which it was supposed had been admitted into the British Fauna on insufficient evidence, says, "The fisherman who brought it described it as being covered with living flesh when taken. On examination we found that it presented the curious appearance of West Indian incrusting shells and British mixed, and the living flesh was doubtless a British sponge, which had grown round the branches in many parts. This fully accounts for the story of its having been found fresh on the British shores."

GOSHAWK. (*Falco palumbarius.*) The Goshawk is twenty-one inches in length; the bill and cere are blue; crown, black, bordered on each side by a line of white, finely speckled with black; upper parts, slate, tinged with brown; legs feathered half way down, and, with the feet, yellow; the breast and belly white, with a number of wavy lines or bars of black; the tail long, of an ash-colour, and crossed with four or five dusky bars: wings much shorter than the tail. The Goshawk frequents the deep solitudes of forests, preying upon hares, squirrels, and the larger ground birds; it also feeds on mice and small birds, and eagerly devours raw flesh. It plucks the birds very neatly, and tears them into pieces before it eats them, but swallows the pieces entire. It is extremely destructive to game, darting through the woods after its prey with great

...ity: but if the object of its pursuit ...its first attack, it almost immediately ...and perches on some bough till new ...resents itself. The Goshawk is now ...the British islands, being chiefly re... to the Highlands of Scotland; but it ...abundant in the forest districts of ...ntal Europe, and extends also through ...perate regions of Asia and America. ...ormerly used in Europe, in common ...e Falcon, Jerfalcon, &c. in the once ...ed royal pastime of falconry; and it ...to be still used by the emperor of ...in his hunting excursions, when he is ...attended by his grand falconer, and ...and of inferior rank. Wilson de... the American bird under the name ...tricapillus, but at the same time sus... that it might prove identical with the ...an, which has since been confirmed.

...CKLE. (*Gracula.*) The principal ...of this genus of birds are natives ...and America; and they chiefly sub... insects and fruits.

...INDIAN GRACKLE. (*Gracula reli...* Edwards describes two varieties of ...cies, which resemble each other in ...spect except in size; the one being ...as a Magpie, and the other no larger ...Blackbird. They have round plump ...short tails, and legs of moderate ...the head, neck, whole body, wings, ...are covered with glossy black fea... ...ining in different lights with green, ...d purple lustres: a white spot ap... ...the middle of the wing; and the ...feet are of a deep yellow colour. ...irds are found in different parts of ...d the Indian islands: they are lively, ...and learn to speak with as much ...as most of the Parrot tribe.

...CRESTED GRACKLE (*Gracula cris...* ...is of a black colour, inclining to a ...ue; but the bottoms of some of the ...ils are white, which forms a white ...ach wing: though the tail is black, ...feathers are tipped with white: but ...fly distinguished for having on the ...t, just at the basis of the bill, a re... ...e tuft of feathers, which it can erect ...ure in form of a crest. It is a native ...

...PARADISE GRACKLE. (*Gracula* ...This species is rather longer than ...kbird; its colour chestnut brown, ...d and neck black, but the latter ...th gray: the plumes on the fore ...the head are fine and narrow, and ...ach eye is a triangular bare space ...colour: the abdomen is white; the ...brown, the lateral feathers tipped ...te; the larger quill-feathers dusky, ...ite bases, forming an oblong white ...the upper edge of each wing: the ...legs are yellow. This bird is a ...f India and the Philippine islands, ...vorations, and particularly fond of ...nd grasshoppers; relative to which ...elates the following curious anec... The isle of Bourbon, *where these* ...re unknown, *was overrun with* locusts, which had unfortunately been introduced from Madagascar; their eggs having been imported in the soil with some plants which were brought from that island. In consequence of this, the Governor-general and the Intendant deliberated seriously on the means of extirpating the noxious insects; and for that purpose caused several pair of the Indian Paradise Grackle to be introduced into the island. This plan promised to succeed; but unfortunately some of the colonists, observing the birds eagerly thrusting their bills into the earth of the new-sown fields, imagined that they were in quest of the grain, and reported that the birds, instead of proving beneficial, would, on the contrary, be highly detrimental to the country. The cause was considered in form. On the part of the birds it was argued, that they raked in the new-ploughed grounds not for the sake of the grain, but the insects; and were therefore beneficial. They were, however, proscribed by the council; and in the space of two hours after the sentence was pronounced against them, not a Grackle was to be found in the island. This prompt execution was however followed by a speedy repentance: the locusts gained the ascendancy, and the people, who only viewed the present, regretted the loss of the Paradise Grackles. In a few years afterwards a few pair were again introduced: their preservation and breeding were made a state affair: the laws held out protection to them, and the physicians on their part declared their flesh to be unwholesome: the Grackles accordingly multiplied, and the locusts were destroyed. — The reader will find, under the word "ROOK," this really important subject discussed at some length, in reference to the habits of that well-known insectivorous and granivorous bird.

GRALLÆ. The fourth order of the class *Aves*, comprehending the long-legged wading birds.

GRALLATORES. The fourth order of Birds according to the system of Mr. Vigors, being placed between the *Rasores* and the *Natatores*.

GRAMPUS. (*Delphinus orca.*) A cetaceous animal, from twenty to twenty-five feet long, and of such an extremely fierce and predaceous nature, that it not only destroys the porpoise and dolphin, but it is reported that it will even attack whales. The nose is flat, and reverted at the extremity; and it has thirty teeth in each jaw, those in front being blunt, round, and slender; the hinder sharp and thick; and between each there is a space adapted to receive the teeth of the opposite jaw when the mouth is closed. The body is broad and deep; the back is black, but on each shoulder there is a large white spot; the sides are marbled with black and white; and the belly is perfectly white. The back fin sometimes measures not less than six feet in length *from the* base to the tip. The Grampus *is found in* the Mediterranean and *Atlantic seas*, as well as in both the polar

regions; and it occasionally appears on the British coasts.

GRASS-FINCH. A genus of Passerine birds. [See POEPHILA.]

GRASSHOPPER. (*Acrydium.*) This genus of Orthopterous insects is distinguished from the Crickets by the roof-like position of the wing-covers, which in the crickets fold horizontally; and they are distinguished from the Locusts, by the inferior robustness of the body, and the length and slenderness of the legs and antennæ. There are several varieties, but it will be sufficient to give an account of the little Grasshopper that breeds in our meadows, and prolongs its shrill music through the summer, in order to elucidate the history of all.

The general colour of the Grasshopper is green, with a line of brown which streaks the back, and two pale lines under the belly and behind the legs. It may be divided into the head, the corselet, and the abdomen: the head is oblong, prone, and may be likened in shape to that of a horse; the mouth is covered by a kind of buckler, and armed with brownish hooked teeth; the antennæ are long and pointed; and the eyes are black and prominent. The corselet is elevated, narrow, and armed above and below with two serrated spines; the back is covered with a strong buckler, to which the muscles of the legs are firmly bound, and round these muscles the vessels of respiration are seen; the last pair of legs are much longer and stronger than the first two pair, and have muscles extremely well adapted for leaping. There are four wings; the anterior ones springing from the second pair of legs, the posterior from the third pair: the hinder wings are much finer and more expansive than the foremost, and are therefore the principal instruments of flight. The abdomen, which is large, is composed of eight rings, and terminated by a forked tail covered with a kind of down. Towards the latter end of autumn the female is observed to be greatly distended with eggs, and she prepares to deposit her burden. In order to form a proper lodgment for them in the earth, Nature has provided her with an instrument at the end of her body, which she can sheathe and unsheathe at pleasure; with this she pierces the earth to the greatest depths possible; and into the opening thereby made she drops her eggs one after another. Having thus provided for the continuance of her race, she does not long survive; for, as the winter approaches, she gradually withers, and dies through a total decay. In the mean time the deposited eggs continue unaltered, either by the severity of the season or the delay of spring: they are oval, white, and of a horny consistence, and they contain a viscous transparent fluid. When the vernal sun begins to animate all nature, the eggs feel his benign influence; and, generally in the beginning of May, an insect is produced from each about the size of a flea: these are at first of a whitish colour, but at the end of two or three days they turn black; and, soon after, to a reddish brown: from their very origin they exhibit the appearance of Grasshoppers without wings, and hop among the grass, as soon as excluded, with surprising agility. Having continued above twenty days from its exclusion without the use of its wings, which are folded up in its body, at length it prepares for its emancipation; and, in order to make the necessary dispositions for its approaching change, it ceases from its grassy food, and finds some convenient shelter where it may be protected from a passing shower. It then exhibits the same laborious writhings, heavings, and palpitations, which are perceptible in all other insects during their metamorphosis; it struggles hard, in fact, to free itself from prison. At length, the skin which covers the head and breast is observed to divide above the neck; and ere long the little insect extricates itself totally from the old skin, which it leaves adhering to the plant under which the transformation was performed. The Grasshopper, thus disengaged from its exterior skin, appears in its perfect form; but at this period it is extremely feeble, and its body quite soft. It is now of a greenish white colour, which becomes more vivid as the moisture on the surface dries up. Still, however, the insect discovers no signs of life, but appears quite spent, and overcome with its exertions. During this time the body continues drying, and the wings unfolding to their greatest expansion; and a curious observer may perceive them, fold after fold, opening to the sun, till at last they become longer than the two hinder legs: the body of the insect is also lengthened during this operation, and becomes more beautiful than before. These insects are generally vocal in the middle of summer; and, about sunset, their notes are much louder than during the heat of the day. The musical organs of the male consists of what has been termed a pair of tabors. They are formed by a thin and transparent membrane stretched in a strong half-oval frame in the triangular overlapping portion of each wing-cover. During the daytime these insects are silent, and conceal themselves among the leaves of trees; but at night they quit their lurking-places, and the joyous males begin the tell-tale call with which they enliven their silent mates. This proceeds from the friction of the tabaret frames against each other when the wing-covers are opened and shut, and consists of two or three distinct notes almost exactly resembling articulated sounds, and corresponding with the number of times that the wing-covers are opened and shut; and the notes are repeated, at intervals of a few minutes, for hours together. Though averse to the exertions of flight, and shy in their aerial excursions, particularly when the weather is moist or cool, they are sometimes seen to fly to considerable distances. When roughly handled they bite sharply; and, in the act of flying, they make a particular noise with their wings. [See LOCUST.]

GRAYLING. (*Thymallus vulgaris.*) A fresh-water fish, of the *Salmonidæ* family, in many respects very similar in its habits to the Trout, delighting in clear rapid streams,

ing with rapidity. Its figure is body, which is longer and flatter of the Trout, seldom exceeds ches; the head is small and tened at the top; teeth nume- and incurved; behind the head, d neck rise suddenly; the body he commencement of the dorsal pering off to the tail; the back s a fine silvery gray, but when t caught they are slightly varied reen, and gold, with a few de- pots. The lateral line is straight; e large, their lower edges being forming regular rows from head op of the back fin is red, the lower f a purple hue; the ventral fins

B.—(THYMALLUS VULGARIS.)

potted with black; and the tail ly forked. The lips are rough; is smooth; and the gills are It is tolerably abundant in seve- the north, and also in the north- nties of Hampshire and Wilt- It is found in the Test and both It is known to be plentiful in way, and Lapland; and it may remarked that it thrives best in ocky or gravelly bottoms, where pool alternate. The spawning April or May, therein differing of the other *Salmonidæ*, which awn late in the autumn: whereas g is in the finest condition in November, when Trout are out

(*Podiceps.*) The name given group of Water birds, allied to Their distinguishing characters , straight, and sharp pointed ; the toes flattened, separate, fringed at their edges by a firm This division of the webbed ly assists its action, in waters are many aquatic plants. The ith which they dive is very re- their progression on land, how- remely awkward; for they are e upon the whole length of the en to shuffle along like seals, by f their feet against the ground. is very feeble; but in the act of wings are of great assistance to

T-CRESTED GREBE. (*Podiceps* The length of this bird is about inches, and the expansion of ety. The bill is red at the base at the point, and between the eyes there is a stripe of black the irides are pale red, and the rned with a large dusky crest, the middle. The cheeks and *surrounded with a long pendent* ruff of a bright tawny colour edged with black; the chin is white; the hind part of the neck and the back are of a sooty hue; and the rump is covered with long soft down, which supplies the place of a tail. The co- vert-feathers on the second and third joints of the wings and the secondaries are white; all the other wing-feathers are dusky: the breast and belly are of a silvery white colour, soft and glossy; the plumage under the wings is dusky; the outsides of the legs are also dusky, but the insides and the toes are a pale green. This bird is found on almost every lake in the north of Europe, and is common in marshes and meres in many parts of England; it breeds among reeds and flags, in a floating nest kept steady by the weeds of the margin; preys on fish; and very rarely quits its watery abode, where by diving and swimming, it is taught to expect food and security. The Grebe is mostly valued for the plumage of its breast, the flesh being rank and nauseous.

The other species of Grebes are the EARED GREBE (*Podiceps auritus*); the RED-NECKED GREBE (*Podiceps rubricollis*); and the LITTLE GREBE (*Podiceps minor*).

GREENFINCH. (*Chlorospiza chloris.*) This bird, which is also known as the Green Linnet and Green Grosbeak, is rather larger than a Sparrow: the beak is thick and whitish: head and back yellowish green; the edges of the feathers grayish inclining to ash-colour about the sides of the head and neck: rump and breast more yellow; greater quills yellow on the outer webs: tail slightly forked; the middle feathers dusky, and the four outer feathers on each side yellow on their exterior webs: legs flesh-colour. Fe- male less bright, and with a brown cast. The Greenfinch is one of the most common birds in this country: it builds its nest in a low and thick bush or hedge, of hay, stubble, grass, and moss, lined with hair, wool, and feathers; laying four or five eggs of a pale green colour, sprinkled with small reddish spots, which are thickest at the larger ends. Its food is principally seed and grain; and it is very easily tamed. Though Green- finches are frequently caged, their note is not to be much admired; but some, if brought up from the nest, will learn to imitate the songs of most other birds. In the winter this bird flocks with the Chaffinches and Yellowhammers; and migrates into warmer districts if the weather be very severe.

GREYHOUND. (*Canis [familiaris] graius.*) This elegant variety of the hound is of no modern origin; for the sport of coursing the hare with Greyhounds was well known in Gaul in the fifth century; and in the annals of our own country it is recorded that among the dogs kept by royal sportsmen of the olden time, this was one; nay, by the forest laws of king Canute it was enacted, that no one under the degree of a gentleman should presume to keep a grey- hound; and even he could keep it only if he lived more than two miles beyond a royal forest, unless two of the dog's toes were cut off. "The third Edward," as Mr. Bell writes, "who usually held his Court at Greenwich during

the hunting season, in order to be contiguous to his royal forest in Essex, kept his Greyhounds, with his other dogs, in what has from that circumstance been called the Isle of Dogs. In this instance, as in more ancient times, the game coursed by the Greyhounds was principally the Red Deer and the Fallow Deer; and it is clear that the dogs must necessarily have been of a very powerful breed to have pulled down so large and active an animal." The Greyhound is remarkable for the slenderness of its shape, the length and pointed form of its muzzle, and the extreme swiftness of its course; it hunts by sight, and not by scent, the nose

GREYHOUND.—(CANIS [FAMILIARIS] GRAIUS.)

being far from keen; the ears droop at the points, and the eyes are small; the back is broad and muscular; the body is lank, and very much contracted beneath; the limbs combine length with muscular power; the neck is long, the chest is capacious and deep; and the tail is very slender, and curved upwards.—The ITALIAN GREYHOUND is a small and very beautiful variety of the species above described; but in this country it could be but of little value for any kind of hunting, as it is unable to bear even a very moderate degree of cold, and its delicate limbs are unequal to the labour of hard running.—The IRISH GREYHOUND, on the contrary, originally called the Wolf-dog, from its having been used in hunting the Wolf when that animal infested the forests of Ireland, is a large and powerful animal; indicating a considerable approach to the Greyhound in form, and supposed to be a cross of that species with the great Danish Dog.

GRIFFIN. (*Gypaëtos.*) A genus of Accipitrine birds, which, though placed by Gmelin in his genus *Falco*, seem more nearly allied in their habits and conformation to the Vultures. [See GYPAETUS.]

GROSBEAK. (*Coccothraustidæ* and *Ploceidæ*.) There are a great variety of birds belonging to this genus; and their general appearance is very similar to birds of the Finch kind. They are distinguished by a strong and thick bill, by means of which they are enabled to break the stones of cherries and other fruit with the greatest facility. In general they are a shy, solitary race, chiefly residing at a distance from the abodes of man; and very few of them are calculated to add much to the harmony of *the grove* by their "dulcet warblings." *Their feet* have three toes before and one behind; and their food generally consists of fruits and seeds. Some of the principal species are hereunder described.

The HAWFINCH GROSBEAK. (*Coccothraustes vulgaris.*) This bird is an inhabitant of the milder climates of Europe, visiting this country only occasionally in severe winters, and being nowhere very numerous. The bill is of a horn colour, conical, and prodigiously thick at the base; the space between the bill and the eye, and thence to the chin and throat, is black; the top of the head reddish chestnut; the cheeks somewhat paler, and the back part of the neck grayish ash: the back and smaller wing-coverts chestnut; the greater wing-coverts gray, in some almost white, forming a band across the wing; the quills are all black, excepting some of the secondaries nearest the body, which are brown; and the four outer quills seem as if clipped off at the ends: the breast and belly pale rusty, growing whiter towards the vent; the tail is black, the ends of the middle feathers excepted, which are gray; the outer ones are tipped with white; legs pale brown. These birds vary considerably: in some the head is wholly black: in others the whole upper part of the body is of that colour; while others have been met with entirely white, excepting the wings. The female greatly resembles the male, but her plumage is less vivid. These birds generally inhabit the woods during summer, and in winter resort near the hamlets and farms. The female builds her nest in trees, of small dry roots and grass, lined with wool, feathers, &c. The eggs are of a bluish-green colour, with brown spots.

The PINE GROSBEAK (*Loxia enucleator*) is rather larger than the preceding, being nearly nine inches long. Beak dusky, very thick at the base, and hooked at the tip; head, neck, breast, and rump, rose-coloured crimson; back and lesser wing-coverts black; greater wing-coverts tipped with white, forming two bars on the wing; quills and secondaries black, the latter edged with white; belly and vent straw-coloured. This bird is common in various parts of America, but is found only in this island in the pine forests of Scotland, where it is supposed to breed; its more native habitations are the pine forests of Siberia, Lapland, and the north of Russia. They build on trees, at a small distance from the ground, and there are generally four white eggs, which are hatched early in June.

The GRENADIER GROSBEAK. (*Pyrenestes ortix.*) This species is gregarious, and builds its nest in large societies, among the reeds, near the rivers and ponds in the vicinity of the Cape of Good Hope. The brilliant plumage of these birds is described as being very striking. The forehead, sides of the head, chin, breast, and belly, are black; wings brown, with pale edges; the rest of the body a most beautiful red; lower part of the thighs brown; legs pale. In size the Grenadier Grosbeak may be compared with the house-sparrow.

The Cardinal Grosbeak. (*Cardinalis Virginianus*: *Loxia cardinalis* of Linnæus.) This species, which is sometimes called the Cardinal-bird, is eight inches in length. The general plumage is a fine red: the bill pale red, and stout: on the head is a crest; and round the bill, and on the

CARDINAL GROSBEAK.
(CARDINALIS VIRGINIANUS.)

throat, the colour is black: the quill and tail feathers is not of so bright a red as the body. The song of the Cardinal Grosbeak very much resembles that of the nightingale, and during the spring and summer its sweet notes are heard from the tops of the highest trees. It is met with in several parts of North America: and is said to collect together great quantities of maize and buckwheat, of which it is very fond.

The Blue Grosbeak. (*Gûiraca cærulea*) is about six inches in length; the bill strong, thick at the base, sharp-pointed, and of a lead colour; surrounded at the base with black feathers; quills and tail brown, with a mixture of green; wing coverts with a red band; all the rest of the plumage blue; legs dusky. It is sometimes found entirely blue, except a black spot between the beak and eye. This species is a native of Brazil.

We might give many more specimens of the Grosbeak genus, if the descriptions were likely to afford matter of an interesting character; and we may also observe that the most important species will be found under other well-known names, as the Bullfinch, Greenfinch, &c. But there is one, called the Sociable Grosbeak, whose habits are worthy of particular notice; and with this species we shall conclude:—

The Sociable Grosbeak. (*Philetærus socius.*) This bird, which is about the size of a Bullfinch, and whose prevailing colour is a ruffous brown, inhabits the interior country at the Cape of Good Hope, where it was first discovered by Mr. Paterson, who gives the following history of it. "Few species of birds live together in such large societies, or have such an extraordinary mode of nidification as these: they build their nests on the Mimosa trees, which grow to a very large size, and appear to be *well calculated* for the purpose, *as the smoothness of their* trunks prevents the birds from being attacked by monkeys and other noxious animals. The method in which their nests are made is very curious. On one tree there could not be less than from eight hundred to a thousand under one general roof. I call it a roof, because it resembles that of a thatched house, and projects over the entrance of the nest below in a very singular manner. The industry of these birds seems almost equal to that of the bee. Throughout the day they appear to be busily employed in carrying a fine species of grass, which is the principal material they employ for the purpose of erecting this extraordinary work, as well as for additions and repairs. Though my short stay in the country was not sufficient to satisfy me by ocular proof that they added to their nest as they annually increased in numbers; still, from the many trees which I have seen borne down by the weight, and others which I have observed with their boughs completely covered over, it would appear that this is really the case. When the tree, which is the support of this aërial city, is obliged to give way to the increase of weight, it is obvious that they are no longer protected, and are under the necessity of rebuilding in other trees. One of these deserted nests I had the curiosity to break down to inform myself of the internal structure of it: and found it equally ingenious with the external. There are many entrances, each of which forms a regular street, with nests on both sides, at about two inches distance from each other. The grass with which they build is called the Boshman's-grass: and I believe the seed of it to be their principal food; though, on examining their nests, I found the wings and legs of different insects. From every appearance the nest which I dissected had been inhabited for many years, and some parts of it were much more complete than others. This, therefore, I conceive to amount nearly to a proof that the animals added to it at different times, as they found necessary from the increase of the family, or rather of the nation or community."

GROUND PIG. (*Aulacodus Swinderianus.*) The name of a South African Rodent belonging to the sub-family *Echimyna:* it gets its name from its burrowing habits.

GROUND SQUIRREL. (*Tamias.*) A genus of Rodent mammalia allied to the true Squirrels, but distinguished from them by the possession of cheek-pouches, and their habit of retreating into subterraneous holes.

The Striped Ground Squirrel (*Tamias striatus*) is a very small species, inhabiting the vicinity of the Rocky Mountains. The general colour is reddish above, mixed with black, and whitish beneath, with four broad white lines on the back. It has not been observed to ascend trees, but nestles in holes, or on the edges of rocks; and the nest is composed of a most extraordinary quantity of vegetable substances. Its principal food seems to consist of the seeds of the pine.

Listen's Ground Squirrel. (*Tomias Listeri*) makes a burrow, generally, about

the roots of trees, or along fences and walls, often of considerable extent, and having several branches, and always two openings. On the back are five longitudinal black bands, separated on each side by two white ones. It is a very pretty, lively, and familiar animal, well known in the United States. A closely allied species is said to be extremely common in Siberia, inhabiting the maple and birch woods of that country, and generally forming their nests or burrows near the root of some tree: they are never known to ascend trees in the manner of other Squirrels, unless suddenly surprised or pursued, when they climb with great expedition, and conceal themselves among the branches: they collect their stores during the autumnal season, and on the setting in of winter conceal themselves in their burrows, the entrances of which they stop, and pass the greatest part of the rigorous season in sleep, and in feeding on their collected stores.

GROUSE. Under this general name are comprehended several species of birds classed by Linnæus in the genus *Tetrao*. Their distinguishing characters are, that they have short arched bills; that their exterior and interior toes are connected to the first joint of the middle toe by a small membrane; that their legs are feathered down to the feet; and that they have a broad naked red skin over each eye.

The WOOD GROUSE, called also the COCK OF THE WOOD, and in Scotland CAPERCAILZIE, (*Tetrao urogallus*) is a magnificent species, two feet nine inches in length, nearly four feet in extended breadth, and weighs from eight to fourteen pounds. The bill is very strong, convex, and of a light horn colour; over each eye there is a naked skin, of a bright red; irides hazel; the nostrils small, and almost hid under a covering of short dusky feathers, which extend under the throat, and are there much longer and darker than the rest: the head and neck are elegantly marked with small transverse lines of black and gray, as are also the back and wings, but more irregularly. The upper part of the breast is of a rich glossy green hue; the rest of the breast and belly are black, mixed with a few white feathers: the sides are marked like the neck: the coverts of the wings are crossed with undulated lines of black and reddish brown; the exterior webs of the greater quill feathers are black; the bend of the wing and under tail coverts pure white: the tail consists of eighteen feathers, and is rounded in shape, and black, with a small white spot on the outer feather on each side, near the extremity: the legs are very stout, and covered with brown silky feathers, with loose webs; the feet and claws horn colour, and the toes furnished on each side with a strong pectinated membrane. The female is considerably less than the male, and differs from him greatly in her colours: her throat is red; the transverse bars on the head, neck, and back are red and black; the breast reddish, varied with a few white spots; belly barred with orange and black, the top of each feather white; the back and wings mottled with red brown and black; the scapulars tipped w white: the tail is of a deep rust colo barred with black, and tipped with white.

This fine bird inhabits wooded and mou talnous countries, particularly pine fore or plantations of juniper. In Russia, Sw den, and other northern countries, it is v common in the forests of pine, which the abound; and the cones of the fir trees, wh it eats, as well as various plants and berri at some seasons give an unpleasant flavo to its flesh. It was formerly met with Ireland, the Highlands of Scotland, a parts of North Wales; but it is now v rarely indeed seen in these islands. Ear in the spring the season for pairing co mences: during this period the cock pla himself on an eminence, where he displ a variety of attitudes, appearing unconsci of danger, and insensible to all around hi the feathers on his head stand erect, his ne swells, his tail is expanded, and his wi droop; his eyes sparkle, and the scar patch on each side of his head assume deeper dye; he at the same time utters singular cry, which has been compared the sound produced by the whetting of scythe: it may be heard at a considera distance, and never fails to draw to him faithful mate. The female lays from si to sixteen eggs, which are white, irregular spotted with yellow, and larger than th of the common hen: they are generall placed in a dry situation, in an artless ne upon the ground, composed of heath twi but she covers her eggs carefully with leav when she is under the necessity of leavi them in search of food. As soon as t young are hatched they follow the moth who leads them to procure the pupæ of an and wild mountain berries, which are the first food.

BLACK GROUSE; BLACK GAME; HEATH COCK, or BLACK COCK. (*Tetrao tetrix*) The male bird is about two feet in length and the expansion of his wings two fe

BLACK GROUSE.—(TETRAO TETRIX.)

nine. The prevailing colour of his plumag is black, richly glossed with blue an

ck, and rump; the rest of the body
ll black. The bill is dark; the eyes
e; below each eye is a spot of dirty
ld eyebrown formed of a naked space
scarlet. The lesser wing-coverts
y brown; the greater white, which
to the ridge of the wing, forming a
ht colour on the shoulder when the
closed; the quills are brown, the
ts and tips of the secondaries white,
a bar of white across the wing: the
lack, changing to deep violet, and
read out, the feathers form a curve
ide; the under tail-coverts are pure
the legs and thighs dark brown,
with white; the feet brown. Like
er species, these birds are common
, Siberia, and other northern coun-
iefly in wooded and mountainous
s; and in the northern parts of our
and on uncultivated moors. The
about one third less than the male;
is much less forked, and she differs
n considerably in colour; the head,
d breast being striped transversely
and black; the back, wing-coverts,
p deep red, varied with black lines;
tail feathers black, with oblique
ed stripes, and tipped with white.
les are polygamous, and fight despe-
rith each other for the females. It
that when the vanquished are put to
ht the victors are left in possession
field, they place themselves on an
e, clap their wings, and with loud
ve notice to their females, who im-
ly resort to the spot. The hen makes
s nest on the heathy ground, and
lays from six to ten eggs, of a dirty
colour, blotched with spots of rusty
The young follow the hen for some
t quit her at the commencement of
der, and keep together in flocks of
r eight till the spring. Their food
principally of fruits and berries, and
r, of the tops of the heath and birch;
ough they are particularly fond of
d mountainous places, in summer
equently come down from their lofty
es for the sake of feeding on corn.

RUFFED GROUSE (*Bonasia umbellus*) described in Wilson's American Ornithology:—"This elegant species is well known in almost every quarter of the United States, and appears to inhabit a very extensive range of country. It is common at Moose Factory, in Hudson's Bay, in lat. 51°; is frequent in the upper parts of Georgia; very plentiful in Kentucky and the Indiana territory, and was found by Captains Lewis and Clarke in crossing the great range of mountains that divide the waters of the Columbia and Missouri, more than three thousand miles, by their measurement, from the mouth of the latter. Its favourite places of resort are high mountains, covered with white pine, hemlock, and such like evergreens. Unlike the pinnated grouse, it rarely frequents the woods; is seldom or never found in open plains; but loves the pine barren declivities of mountains near the sources of water. This *great difference of* disposition in two species, whose food seems to be nearly the same, is very extraordinary. In those open plains called the Barrens of Kentucky, the pinnated grouse was seen in great numbers, but none of the ruffed; while in the high groves with which that singular

RUFFED GROUSE.—(BONASIA UMBELLUS.)

tract of country is interspersed, the latter, or pheasant, was frequently met with; but not a single individual of the former.

The native haunts of the pheasant being a cold, high, mountainous and woody country, it is natural to expect that, as we descend from thence to the sea shores, and the low, flat, and warm climate of the Southern States, these birds should become more rare; and such indeed is the case. In the lower parts of Carolina, Georgia, and Florida, they are very seldom observed: but, as we advance inland to the mountains, they again make their appearance. In the lower parts of New Jersey, we indeed occasionally meet with them; but this is owing to the more northerly situation of the country; for even here they are far less numerous than among the mountains.

"Dr. Turton, and several other English writers, have spoken of a long-tailed grouse, said to inhabit the back parts of Virginia, which can be no other than the present species, there being, as far as I am acquainted, only these two, the ruffed and pinnated grouse, found native within the United States.

"The manners of the pheasant are solitary; they are seldom found in coveys of more than four or five together, and more usually in pairs, or singly. They leave their sequestered haunts in the woods early in the morning, and seek the path or road, to pick up gravel, and glean among the droppings of the horses. In travelling among the mountains that bound the Susquehanna, I was always able to furnish myself with an abundant supply of these birds every morning without leaving the path. If the weather be foggy, or lowering, they are sure to be seen in such situations. They generally move along with great stateliness. The drumming, as it is usually called, of the pheasant, is another singularity of this species. This is performed by the male alone. In walking through solitary woods, frequented by these birds, a stranger is *surprised by suddenly hearing* a kind of thumping *very similar to* that produced by striking

two full-blown ox-bladders together, but much louder; the strokes at first are slow and distinct, but gradually increase in rapidity, till they run into each other, resembling the rumbling sound of very distant thunder, dying away gradually on the ear. After a few minutes' pause, this is again repeated, and, in a calm day, may be heard nearly half a mile off. This drumming is most common in spring, and is the call of the cock to his favourite female. It is produced in the following manner: The bird, standing on an old prostrate log, generally in a retired and sheltered situation, lowers his wings, erects his expanded tail, contracts his throat, elevates the two tufts of feathers on the neck, and inflates his whole body, something in the manner of the turkey cock, strutting and wheeling about with great stateliness. After a few manœuvres of this kind, he begins to strike with his stiffened wings in short and quick strokes, which become more and more rapid until they run into each other, as has been already described. This is most common in the morning and evening, though I have heard them drumming at all hours of the day. By means of this, the gunner is led to the place of his retreat; though, to those unacquainted with the sound, there is great deception in the supposed distance, it generally appearing to be much nearer than it really is.

"The pheasant begins to pair in April, and builds its nest early in May. This is placed on the ground, at the root of a bush, old log, or other sheltered and solitary situation, well surrounded with withered leaves. Unlike that of the quail, it is open above, and is usually composed of dry leaves and grass. The eggs are from nine to fifteen in number, of a brownish white, without any spots, and nearly as large as those of a pullet. The young leave the nest as soon as hatched, and are directed by the cluck of the mother, very much in the manner of the common hen. On being surprised, she exhibits all the distress and affectionate manœuvres of the quail, and of most other birds, to lead you away from the spot. I once started a hen pheasant with a single young one seemingly only a few days old; there might have been more, but I observed only this one. The mother fluttered before me for a moment; but, suddenly darting towards the young one, seized it in her bill, and flew off along the surface through the woods, with great steadiness and rapidity, till she was beyond my sight, leaving me in great surprise at the incident. I made a very close and active search around the spot for the rest, but without success. Here was a striking instance of something more than what is termed blind instinct, in this remarkable deviation from her usual manœuvres when she has a numerous brood. It would have been impossible for me to have injured this affectionate mother, who had exhibited such an example of presence of mind, reason, and sound judgment, as must have convinced the most bigoted advocates of mere instinct. To carry off a whole brood in this manner *at once* would have been impossible, and to *attempt* to save one at the expense of the rest would be unnatural. She therefore usually takes the only possible mode of saving them in that case, by decoying the person in pursuit of herself, by such a natural imitation of lameness as to impose on most people. But here, in the case of a single solitary young one, she instantly altered her plan, and adopted the most simple and effectual means for its preservation.

"The pheasant generally springs within a few yards, with a loud whirring noise, and flies with great vigour through the woods, beyond reach of view, before it alights. With a good dog, however, they are easily found; and at some times exhibit a singular degree of infatuation, by looking down from the branches where they sit, on the dog below, who, the more noise he keeps up, seems the more to confuse and stupify them, so that they may be shot down, one by one, till the whole are killed, without attempting to fly off. In such cases those on the lower limbs must be taken first; for, should the upper ones be first killed, in their fall they alarm those below, who immediately fly off. In deep snows they are usually taken in traps, commonly dead traps, supported by a figure 4 trigger. At this season, when suddenly alarmed, they frequently dive into the snow, particularly when it has newly fallen, and, coming out at a considerable distance, again take wing. They are pretty hard to kill, and will often carry off a large load to the distance of two hundred yards, and drop down dead. Sometimes, in the depth of winter, they approach the farm house, and lurk near the barn, or about the garden. They have also been often taken young, and tamed, so as to associate with the fowls; and their eggs have frequently been hatched under the common hen; but these rarely survive until full grown. They are exceedingly fond of the seeds of grapes; occasionally eat ants, chestnuts, blackberries, and various vegetables. Formerly they were numerous in the immediate vicinity of Philadelphia; but, as the woods were cleared and population increased, they retreated to the interior. At present there are very few to be found within several miles of the city, and those only singly, in the most solitary and retired woody recesses.

"The pheasant is in best order for the table in September and October. At this season they feed chiefly on whortleberries, and the little red aromatic partridge-berries, the last of which give their flesh a peculiar delicate flavour. With the former our mountains are literally covered from August to November; and these constitute, at that season, the greater part of their food. During the deep snows of winter, they have recourse to the buds of alder, and the tender buds of the laurel. I have frequently found their crops distended with a large handful of these latter alone; and it has been confidently asserted, that, after having fed for some time on the laurel buds, their flesh becomes highly dangerous to eat of, partaking of the poisonous qualities of the plant. The same has been asserted of the flesh of the deer, when, in severe weather and deep snows, they subsist on the leaves and bark of the laurel.

…s of the crop and stomach have had …diffuse themselves through the flesh, …often the case, it may be unwhole…ad even dangerous. Great numbers …birds are brought to our markets, …times, during fall and winter; some …ch are brought from a distance of …an a hundred miles, and have been …y dead a week or two, unpicked and …n, before they are purchased for the …Regulations, prohibiting them from …ought to market unless picked and …would, very probably, be a sufficient …from all danger. At these inclemsons, however, they are generally …ld dry; and, indeed, at all times, …sh is far inferior to that of the quail, …e pinnated grouse. They are usually …Philadelphia market, at from three …s of a dollar to a dollar and a quarter …and sometimes higher.

…pheasant, or partridge of New …d, is eighteen inches long, and twen…e inches in extent; bill, a horn …paler below; eye, reddish hazel, …tely above which is a small spot of …e, of a scarlet colour; crested; head …ck, variegated with black, red brown, …and pale brown; sides of the neck …ed with a tuft of large black feathers, …nine or thirty in number, which it …ually raises; this tuft covers a large …f the neck destitute of feathers; body …a bright rust colour, marked with …ots of yellowish white, and sprinkled …lack; wings, plain olive brown, ex…edged with white, spotted with …the tail is rounding, extends five …beyond the tips of the wings, is of a …reddish brown, beautifully marked …numerous waving transverse bars of …is also crossed by a broad band of …within half an inch of the tip, which …ish white, thickly sprinkled and

consists of sixteen feathers, of equal lengths, the four middlemost barred with red, the others black; the thighs are a pale red, obscurely barred with black; the legs and feet are clothed with soft white feathers down to the claws, which are strong, and of a light colour. This species seems to be peculiar to Britain: it is very plentiful in the Highlands of Scotland, and by no means scarce in any of the wild, heathy, and mountainous tracts in the northern counties of England and Wales. Red Grouse pair in spring, and lay from six to ten eggs: the young brood follows the hen during the whole summer; and, in winter, they unite in flocks of forty or fifty; they are sometimes seen in the valleys, but generally keep on the summits of hills, where they feed on mountain berries, &c., and are exceedingly shy and wild.

White Grouse. [See Ptarmigan.]

Long-tailed Grouse. (*Tetrao Phasianellus.*) This bird, which is about the size of a pheasant, inhabits the mountainous parts of the country about Hudson's Bay, and other northern parts of the American continent. The bill is dusky, the head and neck are of a bright reddish brown, variegated with transverse waved dusky lines; the plumage of the back, wings, and tail is black in the middle, indented with bright brown on the sides, and transversely marked with black and brown at the tips; the outer coverts of the wings, and the quill feathers next the back, have white tips; and the primaries have spots of white along their outer webs. The two middle feathers of the tail are considerably the longest, the rest gradually shortening on each side: the upper part of the breast is brown, but by degrees becomes white; as do the belly, the sides under the wings, and the covert feathers under the tail. The legs are covered with fine filiform feathers of a pale brown colour,

and gray brown; over the eyelids is a bare red space; nostrils covered with black, with a small white spot on each side, and one beneath; throat, breast, and belly, black; the latter spotted with white, except the middle; sides of the body barred transversely with grey-brown and dusky; the feathers with a white stripe near the tip: under tail coverts black and white: tail black, tipped with rufous: feathers of the tarsi gray-brown: claws gray: beak black.

PINNATED GROUSE. (*Tetrao Cupido.*) In its voice, manners, and peculiarity of plumage, the Pinnated Grouse is the most singular, and, in its flesh, the most excellent, of all those of its tribe that inhabit the territory of the United States. Though an inhabitant of different and very distant districts of North America, this rare bird is

PINNATED GROUSE.—(TETRAO CUPIDO.)

extremely particular in selecting his place of residence, pitching only upon those tracts whose features and productions correspond with his modes of life, and avoiding immense intermediate regions that he never visits. Open dry plains, thinly interspersed with trees, or partially overgrown with shrub oak, are his favourite haunts: their predilection for such situations being, according to the opinion of Wilson, to be best accounted for by considering the following facts and circumstances:—First, their mode of flight is generally direct, and laborious, and ill calculated for the labyrinth of a high and thick forest, crowded and intersected with trunks and arms of trees, that require continual evolution of wing, or sudden turnings, to which they are by no means accustomed. Secondly, their known dislike of ponds, marshes, or watery places, which they avoid on all occasions, drinking but seldom, and it is believed, never from such places. The last, and probably the strongest inducement to their preferring these plains, is the small acorn of the shrub oak; the strawberries, huckleberries, and partridge-berries, with which they abound, and which constitute the principal part of the food of these birds. These brushy thickets also afford them excellent shelter, being almost impenetrable to dogs or birds of prey.

The Pinnated Grouse is nineteen inches long, twenty-seven inches in extent, and weighs about three pounds; the neck is furnished with supplemental wings, each composed of eighteen feathers, five of which are black, and about three inches long; the rest shorter, also black, streaked laterally with brown, and of unequal lengths; the head is slightly crested; over the eye is an elegant semicircular comb of rich orange, which the bird has the power of raising or relaxing; under the neck wings are two loose, pendulous, and wrinkled skins, extending along the side of the neck for two-thirds of its length, each of which, when inflated with air, resembles, in bulk, colour, and surface, a middle-sized orange; chin, cream-coloured; under the eye runs a dark streak of brown; whole upper parts mottled transversely with black, reddish brown, and white; tail short, very much rounded, and of a plain brownish soot colour; throat elegantly marked with touches of reddish brown, white, and black; lower part of the breast and belly, pale brown, marked transversely with white; legs covered to the toes with hairy down of a dirty drab colour; feet dull yellow; toes pectinated; vent whitish; bill brownish horn colour; eye reddish hazel. The female is considerably less, of a lighter colour; destitute of the neck wings, the naked yellow skin on the neck, and the semicircular comb of yellow over the eye.

The season for pairing is in March, and the breeding time is continued through April and May. Then the male Grouse distinguishes himself by a peculiar sound. When he utters it, the parts about the throat are sensibly inflated and swelled. It may be heard on a still morning for three or more miles. This noise is a sort of ventriloquism. It does not strike the ear of a bystander with much force, but impresses him with the idea, though produced within a few rods of him, of a voice a mile or two distant. This note is highly characteristic. Though very peculiar, it is termed *booing*, from its resemblance to the blowing of a conch or horn from a remote quarter. The female makes her nest on the ground, in recesses very rarely discovered by men; and she usually lays from ten to twelve brownish-coloured eggs, much resembling those of a guinea-hen. When hatched, the brood is protected by her alone. Surrounded by her young, the mother bird exceedingly resembles a domestic hen with her chickens. When at such times they are surprised, the dam utters a cry of alarm; and while the little ones are hurrying to a place of safety, their anxious parent beguiles the spectator by drooping and fluttering her wings, limping along the path, rolling over in the dirt, and other pretences of inability to walk or fly.

During the period of mating, and while the females are occupied in incubation, the males have a practice of *assembling*, principally by themselves. To some select and central spot where there is very little underwood, they repair from the adjoining district. From the exercises performed there, this is called a *scratching place*. The time of meeting is the break of day. As soon as the light appears, the company assembles from every side, sometimes to the number of forty or fifty. When the dawn is past, the ceremony begins by a low booting from one

answered by another; come forth one by one rutting about with all ation they can display. rvated; the feathers on nto a sort of ruff; the are expanded like fans; a style resembling the cock. They seem to vie tateliness; and, as they uently cast looks of in- of defiance. These are es. They engage with fierceness; and during leap a foot or two from r a cackling, screaming, These places of ex- often discovered by the l discovery it has been Their destroyers con- lurking holes made of "bough houses," within ot. Hither they repair ieces, in the latter part ait the appearance of g the moment when ing each other, or en- hen a greater number e, they pour on them a of shot. They com- in coveys of ten or a he phrase is, until the it has been remarked, ny of sportsmen have of Grouse, the birds e upon their pinions ircled; but each runs sed the person that is tters off with the utmost eresting facts contained ount are derived from erican Ornithology" by

applied more especially ns or maggots hatched les.

name of the family of nted by the Crane.

of Grallatorial birds family *Gruidæ*. [See

The second family be- *torial Orthoptera*; con- d House Cricket. [See

RD. (*Steatornis Caripen-* th America, belonging suckers (*Caprimulgidæ*), ty and habits of which a ount is given by Baron "Personal Narrative." ize of a common fowl; , brownish-grey, mixed black dots; large white bordered with black on wing and tail feathers; back; the bill is horny, upper mandible hooked; nished with stiff hairs,

The following narrative is derived, in a somewhat abridged form, from an article by the talented author of Zoological Recreations.—"When they (Humboldt and his party) arrived at the foot of the lofty mountain of Guacharo, they were only four hundred paces from the cavern, without yet perceiving the entrance. The torrent runs in a hollow excavated by the waters; and they went on under a ledge or cornice, the projection of which prevented them from seeing the sky. The path winds like the river, and, at the last turning, they suddenly stood before the immense opening of the cave. The *Cueva del Guacharo* is pierced in the vertical profile of a rock, and the entrance is towards the south, forming a vault eighty feet broad and seventy-two feet high, an elevation but a fifth less than that

GUACHARO.—(STEATORNIS CARIPENSIS.)

of the Louvre. The rock surmounting the cavern was covered with trees of gigantic height, and all the luxuriant profusion of an intertropical vegetation. The travellers saw with astonishment plantain-leaved heliconias eighteen feet in height, the praga palm, and tree arums, follow the banks of the river, even to the subterranean places. There the vegetation continues, as in the deep crevices of the Andes, half shut out from the light of day, nor does it disappear till a distance of thirty or forty paces from the entrance. The party went forward for about four hundred and thirty feet without being obliged to light their torches. Where the light began to fail, they heard from afar the hoarse cries of the *Guacharo birds*. These birds quit the cavern only at nightfall, especially when there is moonlight; and Humboldt remarks that it is almost the only frugivorous nocturnal bird yet known. It feeds on very hard fruits, and the Indians assured him that it does not pursue either the lamellicorn insects or those *phalænæ* which serve as food to the goatsuckers. He states that it is difficult to form an idea of the horrible noise made by thousands of these birds in the dark recesses of the cavern, whence their shrill and piercing cries strike upon the vaulted rocks, and are repeated by the echo in the depths of the grotto. By fixing torches of copal to the end of a long

kind of cushion between the bird's legs. Humboldt here remarks, that this quantity of fat in frugivorous animals, not exposed to the light, and exerting but little muscular motion, brings to mind what has been long observed in the fattening of geese and oxen. It is well known, he adds, how favourable darkness and repose are to this process. At the period above mentioned, which is generally known at Caripe by the designation of 'the oil harvest,' huts are built by the Indians, with palm leaves, near the entrance, and even in the very porch of the cavern. There the fat of the young birds just killed is melted in clay pots over a brushwood fire; and this fat is named butter or oil of the Guacharo. It is half liquid, transparent, inodorous, and so pure that it will keep above a year without turning rancid. Humboldt observes that the race of Guacharo birds would have been extinct long since if several circumstances had not contributed to its preservation. The natives, withheld by superstitious fears, seldom dare to proceed far into the recesses of the cavern. Humboldt had great difficulty in persuading them to pass beyond the outer part of the cave, the only portion of it which they visit annually to collect the oil; and the whole authority of the *Padres* was necessary to make them penetrate as far as the spot where the floor rises abruptly at an inclination of sixty degrees, and where a small subterraneous cascade is formed by the torrent. In the minds of the Indians this cave, inhabited by nocturnal birds, is associated with mystic ideas, and they believe that in the deep recesses of the cavern the souls of their ancestors sojourn. They say that man should avoid places that are enlightened neither by the sun nor the moon; and 'to go and join the Guacharoes' means to rejoin their fathers—in short, to die. At the entrance of the cave the magicians and poisoners perform their exorcisms to conjure

species (*Ipsilon hadrochilus*) is [illegible] many parts of America and th[illegible] India islands. It inhabits rocky a[illegible] places; feeds on insects and vegetal[illegible] is often seen of the length of from [illegible] even five feet: its general colour [illegible] shaded with brown: the back is [illegible] serrated; and this, with its lar[illegible] pouch, which it has the power of [illegible] to a great degree, gives a formidabl[illegible] ance to an animal otherwise harmi[illegible] learn from Catesby that these repti[illegible] various sizes, from two to five feet [illegible] that their mouths are furnished wi[illegible] ing small teeth, but their jaws [illegible] with a long beak, with which they [illegible] great strength: and that they inha[illegible] countries only. Many of the [illegible] islands abound with them, where th[illegible] in hollow rocks and trees. Their [illegible] not a hard shell, like those of allig[illegible] a skin only, like those of a turtle; [illegible] esteemed a good food: they lay [illegible] number of eggs at a time, in [illegible] which are there hatched by the su[illegible] These Guanas are a great part of [illegible] sistence of the inhabitants of the [illegible] islands, for which purpose they vi[illegible] of the remote *Kayes* and islands [illegible] sloops to catch them, which they d[illegible] trained up for that purpose. The[illegible] easy of digestion, delicate, and wel[illegible] they are sometimes roasted, but [illegible] common way is to boil them, takin[illegible] leaves of fat, which are melted and [illegible] and put into a calabash or dish, in [illegible] they dip the flesh of the Guana as [illegible] it. Though they are not amphibi[illegible] are said to keep under water above [illegible] Their pace on land is slow; and w[illegible] swim, they do not use their feet, b[illegible] guide themselves with their tail[illegible] are so impatient of cold, that th[illegible] appear out of their holes but when [illegible] shines.

together in shoals, feeding on worms, soft insects, &c., and affording excellent amusement to anglers from the avidity with

GUDGEON.—(GOBIUS GOBIO.)

they seize the bait: they may also be taken in considerable numbers with the casting-net. The Gudgeon spawns in May. They among stones in shallow waters. Its flesh is delicate, and easy of digestion.

GUILLEMOT. (*Uria.*) The Guillemots are genus of sea-birds, having a striking resemblance both to the *Alcidæ* (Auks) and *Procellidæ* (Divers). Their bills, though slender shape, are firm, strong, and with the upper mandible slightly bending at the end, and the base covered with soft feathers: tongue long and slender; legs set far backward: and no hind toe. Some of the species appear to be very stupid, as experience not seeming to teach them danger of fire-arms; while others are extremely alert. They are numerously found over various parts of the northern ocean, like many others, seek more genial climes on the approach of winter: during that season they are regular visitants of the British coasts.

BRÜNNICH'S GUILLEMOT.—(URIA TROILE.)

BRÜNNICH'S GUILLEMOT. (*Uria troile.*) This is about seventeen inches in length, and twenty-seven in breadth. The bill is black, straight, nearly three inches long, and sharp-pointed: from each eye to the ear part of the head there is a slight tuft of the plumage; and the feathers on the upper part of the bill are short, and like velvet. The head, neck, back, wings, and tail, are of a deep mouse-colour; the tips of the lesser quill-feathers, the breast, belly, and vent, are white; the entire under part of the body is pure white; legs dusky. The Auk, which it greatly resembles, but the Guillemot lays but one egg, which is in proportion to her size: sometimes of a pale blue or sea-green colour, and at times white, *spotted, or neatly* streaked with intersecting lines. These birds are found in great numbers on the cliffs which encircle several parts of our coasts; and, in the breeding season especially, they will often suffer themselves to be killed or taken, rather than quit the cliff they have chosen for their abode.

The young has been described as a distinct species, by some authors, as the *Lesser Guillemot*. In this state it measures sixteen inches in length, and from tip to tip of its extended wings, twenty-six. The top of the head, the whole upper part of the body, the wings, and the tail, are of a very dark mouse-colour; the cheeks, throat, and lower side of the body, white; from the angle of the eye is a dusky stroke, pointing to the back part of the head; the tips of the secondary feathers are white; the tail is very short; and the legs and feet are dusky.

The BLACK GUILLEMOT. (*Uria grylle.*) This species, called by seamen the *Dovekey* or *Dovekie*, differs from the preceding principally in the colour of its plumage, which, except a large patch of white on the coverts of each wing, is black, sleek and glossy; its feathers appearing all unwebbed, like silky hair; legs and feet red; claws black. The

BLACK GUILLEMOT.—(URIA GRYLLE.)

nest is made in the deep crevices of the rocks which overhang the sea: the egg (for it is generally said that one egg only is laid) is grey, sometimes spotted with rust-colour. On this much questioned and very questionable fact, the observing and intelligent American ornithologist, Audubon, thus writes:—"Whether European writers have spoken of this species at random, or after due observation, I cannot say. All I know is, that every one of them whose writings I have consulted, says that the Black Guillemot lays only *one egg*. As I have no reason whatever to doubt their assertion, I might be tempted to suppose that our species differs from theirs, were I not perfectly aware that birds in different places will construct different nests, and lay more or fewer eggs. Our species always deposits three, unless it may have been disturbed; and this fact I have assured myself of by having caught the birds in more than twenty instances sitting on that number. Nay, on several occasions, at Labrador, some of my party and myself *saw* several Black Guillemots sitting on eggs in the same fissure of a rock, where *every bird* had three eggs under it; a *fact which* I communicated to my friend *Thomas Nuttall*. What was most surprising

BLACK GUILLEMOT.—WINTER PLUMAGE.
(URIA GRYLLE.)

We now turn to the first volume of Mr. Waterton's amusing and characteristic Essays, to extract his *Notes of a visit to the haunts of the Guillemot.* "The immense range of perpendicular rocks, lashed by old ocean's briny surge, offers a choice and favourable retreat to myriads of wild-fowl, from far-famed Flamborough-head to Bempton, and thence to Buckton and Speaton, and outwards to the Bay of Filey. He who wishes to examine the nidification of these birds ought to be at this part of the sea-coast early in the month of May. About five miles from Bridlington Quay is the village of Flamborough, chiefly inhabited by fishermen; and a little farther on is a country inn, called the North Star, which has good accommodation for man and horse; but a lady would feel herself ill at ease in it, on account of the daily visits of the fishermen, those hardy sons of Neptune, who stop at it on their way to the ocean, and again on their return. Here they rendezvous, to fortify their interior with a pint or two of comfort, and to smoke a pipe, by way of compensation for the many buffets which they ever and anon receive in the exercise of their stormy and nocturnal calling.

"On the bare ledges of these stupendous cliffs the Guillemot lays its egg, which is exposed to the face of heaven, without any nest whatever; but the razor-bills and puffins lay theirs in crannies, deep and difficult of access. Here too the peregrine falcon breeds, and here the raven rears its young; while the rock-pigeon and the starling enter the fissures of the precipice, and proceed with their nidification, far removed from the prying eye of man. The Kittiwake makes her nest of dried grass wherever she can find a lodgment, and lays two spotted eggs, very

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have been marked by mutual cons

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is generally carried on by three m
two will suffice in case of necessity
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deep, on the table land at the t
precipice. To this bar is fastened
est of the two ropes, and then it
down the rocks. He who is to des
puts his legs through a pair of hem
which meet round his middle,
form a waistband. At each end of
band is a loophole, through which
the smaller rope. Sometimes an
and eye are used in lieu of this
man now holds the rope firmly in
and gradually lowers his comrade
precipice. While he is descendi
hold of the other rope, which wa
to the iron bar; and, with this
he passes from ledge to ledge, and
to rock, picking up the eggs of t
mot, and putting them into two ba
he had slung across his shoulder a
menced his arduous undertakin
he has filled these bags with egg
the rope, and the motion informs
at the top that it is now time to
up. On coming up again to the
whence he first set out, all the eggs
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a halfpenny a-piece. The rocks a
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dress on the part of the descendin
to save himself from being hit by

"As I was lowered down, the grandeur and sublimity of the scene beggared all description, and amply repaid any little unpleasant sensations which arose on the score of danger. The sea was roaring at the base of this stupendous wall of rocks; thousands and tens of thousands of wild-fowl were in an instant on the wing: the kittiwakes and jack-daws rose in circling flight; while most of the Guillemots, razorbills, and puffins left the ledges of the rocks in a straight and downward line, with a peculiarly quick motion of the pinions, till they plunged into the ocean. It was easy to distinguish the puffins from the razorbills in their descent: these presented a back of a uniformly dark colour, those had a faint white diagonal line running across the wings. The nests of the kittiwakes were close to each other, on every part of the rocks which was capable of holding them; and they were so numerous as totally to defy any attempt to count them. On the bare and level ledges of the rocks, often not more than six inches wide, lay the eggs of the Guillemots: some were placed parallel with the range of the shelf, others nearly so, and others with their blunt and sharp ends indiscriminately pointing to the sea. By no glutinous matter, nor any foreign body whatever, were they affixed to the rock: bare they lay, and unattached, as on the palm of your outstretched hand. You might see nine or ten, or sometimes twelve old Guillemots in a line, so near to each other that their wings seemed to touch those of their neighbours; and when they flew off at your approach, you would see as many eggs as you had counted birds sitting on the ledge. The eggs vary in size and shape and colour beyond all belief. Some are large, others small, some exceedingly sharp at one end, and others nearly round. The rock-climbers assure you that the Guillemot, when undisturbed, never lays more than one egg; but if that be taken away, she will lay another, and so on. They also assure you that when the young Guillemot gets to a certain size, it manages to climb upon the back of the old bird, which conveys it down to the ocean. Having carried a good telescope with me, through it I saw numbers of young Guillemots, diving and sporting on the sea, quite unable to fly; and I observed others on the ledges of the rocks, as I went down among them, in such situations that, had they attempted to fall into the waves beneath, they would have been killed by striking against the projecting points of the intervening sharp and rugged rocks: wherefore I concluded that the information of the rock-climbers was to be depended upon; and I more easily gave credit to it, because I myself have seen an old swan sailing on the water with her young ones upon her back, about a week after they had been hatched.

"He who rejoices when he sees all nature smiling around him, and who takes an interest in contemplating the birds of heaven as they wing their way before him, will feel sad at heart on learning the unmerited persecution to which these harmless *sea-fowl* are exposed. Parties *of sportsmen, from all* quarters of the kingdom, visit Flamborough and its vicinity during the summer months, and spread sad devastation all around them. No profit attends the carnage; the poor unfortunate birds serve merely as marks to aim at, and they are generally left where they fall. Did these heartless gunners reflect, but for one moment, how many innocent birds their shot destroys; how many fall disabled on the wave, there to linger for hours, perhaps for days, in torture and in anguish; did they but consider how many helpless young ones will never see again their parents coming to the rock with food; they would, methinks, adopt some other plan to try their skill, or cheat the lingering hour."

GUINEA-FOWL, or PINTADO. (*Numida meleagris.*) The Guinea-fowls are natives of Africa and its adjacent islands: their manners are similar to those of the domestic poultry, and their food the same. This species is bigger than a large cock: the head is bare of feathers, and covered with a naked bluish skin; on the top is a callous conical protuberance: and on each side of the upper mandible, at the base, hangs a loose wattle, which in the female is red, and in the male bluish: the upper part of the neck is almost naked, being very thinly furnished with a few straggling hairy feathers: the skin is of a bluish ash: the lower part of the neck is

GUINEA-FOWL.—(NUMIDA MELEAGRIS.)

covered with feathers of a purple hue; but the general colour of the plumage is dark bluish gray, sprinkled with round white spots of different sizes, on the whole of the feathers, the breast only excepted, which is of a uniform gray blue: the greater quills are white; and the rest are similar to the upper parts of the plumage, spotted and longitudinally barred with white. Its wings are short, and the tail pendulous, or pointing downwards.

This bird is now common in our poultry yards, but from the circumstance of the young ones being difficult to rear, they are not bred in numbers at all equal to those of the domestic poultry. The female lays many eggs in a season, which she frequently secretes till she has produced her young brood. The egg is smaller than that of the common hen, and of a rounder shape; in colour reddish white, obscurely freckled with a darker colour; and is delicious eating. *The Guinea-fowl* is a restless and clamorous *bird*: its voice is harsh and unpleasant, con-

this country by many persons, who consider their flavour to resemble that of the pheasant.

In Jamaica and other islands in the West Indies, the Guinea-fowls come in numerous coveys from the woods, and scattering themselves in the provision-grounds at early dawn, commit serious depredations by scratching up and devouring the seed-yams, &c.; and as they are birds of extreme caution and suspicion, it is no easy matter to get at them without the assistance of a dog; but when pursued by an animal whose speed exceeds their own, they instantly betake themselves to a tree, where, their attention being intently fixed upon the dog beneath, they may easily be shot. They are also sometimes caught, Mr. Gosse tells us, by the following stratagem: a small quantity of corn is steeped for a night in proof rum, and is then placed in a shallow vessel, with a little fresh rum, and the water expressed from a bitter cassava, grated: this is deposited within an enclosed ground to which the depredators resort. A small quantity of the grated cassava is then strewed over it, and it is left. The fowls eat the medicated food eagerly, and are soon found reeling about intoxicated, unable to escape, and content with thrusting the head into a corner. Frequently a large part of the flock are found dead from this cause.

The Crested Guinea-fowl. (*Numida cristata*.) This species inhabits the hottest parts of Africa, and is smaller than the one above described. The occiput, upper part of the neck, and the throat, are nearly destitute of feathers: the sides and hinder part of the neck are of a deep blue colour; the space round the ears is blue gray; and the anterior part of the neck is of a crimson red: the head is surmounted by a fine crest, composed of black feathers, with delicate webs, drooping over the hind head and beak. The general plumage is black; the body, with

rocky cliffs by their irregular mo
whilst their shrill cries are often
by the noise of the waves, or nearly
in the roarings of the surge. They
ally take a wide range over the oc
are met with by navigators many
distant from the land. They are al
and gluttonous, almost indiscrimina
vouring whatever comes in the
whether of fresh or putrid substan
they are obliged to disgorge their ov
stomachs; but, at the same time, it
that they are able to endure hunge
while. The larger kind of Gulls
common in cold climates of the nor
they breed and rear their young,
chiefly upon the rotting carcasses
whales, &c., which they find floatin
sea, among the ice, or driven on sho
wind and waves. In temperate an
vated countries some species occa
leave the shores for the interior, pa
search for a change of food, such a
slugs, &c., and of these they find, fo
an abundant supply on the downs
tures which they visit. Their gene
racteristics are—a strong and strai
but bent downwards at the point; t
mandible has an angular prominen
under side, which tapers towards, a
its tip; the tongue is a little clove
body is clothed with a great quan
down and feathers, which, together
large head and long wings, give th
an appearance of bulk, without a
tionate weight. The legs are smal
above the knees; feet webbed, and
toe detached, and very small.

The Common Gull. (*Larus canu*
bird, which is one of the most num
the genus, breeds on the ledges of c
overhang the sea; and, during th
season, frequents almost every pa

yellow, very thick and strong; the ng angle on the lower mandible is , with a black spot in the middle, side: the irides are yellow, and the the eyelids orange: the upper part ck and wings black: all the other its plumage, including the tips of l feathers, are white: the legs are of sh-colour. The Black-backed Gull en in the northern parts of Europe, but thinly scattered on the coasts of . In their native haunts, their fa- breeding places are high inaccessible vered with long coarse grass. Their of a round shape, of a dark olive thinly marked with dusky spots, and ck at the thicker end. They prin- subsist on fish, but when such food ily obtainable they will devour Their cry is hoarse and disagree-

IVORY GULL. (*Larus eburneus.*) A f Gull, so called from its white plu- s pureness of which certainly equals new-fallen snow. It is very com-

RY GULL.—(LARUS EBURNEUS.)

the arctic regions, especially in Baf- and the straits leading to it. By e Voyagers, Captains Parry, Lyons, d others, it is often mentioned, and gly characteristic of the arctic seas. d to have occurred in the Orkney bed in Britain this snow-white bird regarded as about as *rara* an *avis* ck swan was to the ancients.

HERRING GULL, or SILVERY GULL. *rgentatus.*) This species, which has its name from pursuing and prey- the shoals of herrings, is met with rthern seas, and is also well known own coasts. In length it is twenty- ches, and in breadth fifty-two: the llow, except the spot on the angular the under mandible, which is deep the irides pale yellow, and the the eyelids red: the head, neck, are white; the back and wings re dark bluish ash; and the legs ale flesh-colour. They make their dry grass, mixed with sea-weed, on eating ledges of the rocks, and lay s of a dirty white colour, spotted k. These Gulls are said to be re- e for their vigilance; and fishermen describe them as the bold and constant attendants on their nets, from which they find

HERRING-GULL, or SILVERY GULL.
LARUS ARGENTATUS. (ADULT.)

it difficult to drive them. The young, which are ash-coloured spotted with brown, do not assume their mature plumage till they are

HERRING-GULL.
LARUS ARGENTATUS. (YOUNG.)

one year old: a circumstance, indeed, common to others of the genus; and which, not being properly attended to, has occasioned considerable confusion in the descriptions which have sometimes been given of them. [For the Arctic Gull and Skua Gull, see LESTRIS.]

GULO. A genus of carnivorous quadrupeds, the formidably armed skull of which is well shown in the woodcut for the habits

SKULL OF WOLVERINE.—(GULO LUSCUS.)

This fish is distinguished by its elongated body, and varies from one to two feet in length: the back is of a greenish brown colour, marked with black, yellow, and white spots; the lateral line is very prominent, and strongly serrated; and the sides are of a pale hue, variegated with numerous white spots: the belly is white; the nose long, sloping, and bifurcated. The eyes are large: near the extremity of the gill-covers there is a strong, sharp, long spine; and exactly above the pectoral fins there is another. The first dorsal fin consists of eight spiny rays, and the second of nineteen soft rays; the pectoral fins are transparent, and supported by ten rays, bifurcated from the middle; the ventral fins contain six rays, and the anal nineteen. The Grey Gurnard is common on our coasts, feeding on worms, insects, &c. It bites eagerly at a red bait, and is usually taken with a hook in deep water, though in calm weather they may be seen in considerable numbers on the surface. They make a sort of croaking noise, or *croon*, whence probably arises the name of crooner, by which they are called in Ireland.

The RED GURNARD, or CUCKOO GURNARD. (*Trigla cuculus.*) This is an elegant species, about a foot in length, and of a slender form; its colour a beautiful bright red, more or less distinctly marked by whitish transverse bars, the sides and belly silvery white: scales extremely small; lateral line composed of pointed white scales edged with black; a similar row on each side the back: fins transparent; the first dorsal marked on the edge by a black spot; the second tinged near its edge with yellow. It is common on the English coasts; feeds on crustaceous animals; and spawns in May or June.

The SAPPHIRINE GURNARD. (*Trigla hirundo.*) This valuable species is distinguished by the large size of its pectoral fins,

merous bright blue spots: pectoral
six in number, not separate as in o
cies, but united, so as to appear lik
fin on each side the thorax: tail pa
with the rays crossed by dusky sp
the base strengthened by two o
transverse bony ribs. In the Mediter
Atlantic, and Indian seas, the Flyi
nard swims in shoals; and is of
darting from the water and sustaini
for a while in the air, after the m
the genus Exocetus.

GYMNOPHTHALMIDÆ. The
a family of Lizards, in which the
distinct and exposed, the eyelids be
mentary. There are several genera
will be found described in Mr. Gra
able List of the Reptiles in the
Museum; but, important as these
naturalists, it is quite out of the scop
work to refer to them.

GYMNOTUS. A genus of Mala
gious fishes, which contains the wel
GYMNOTUS ELECTRICUS, or ELECTR
a fish possessing the extraordinar
perty of communicating a sensation
to an electrical shock, when touch
the hand or an electric conducto
Gymnotus is a fish of a disagreeable
ance, bearing a general resemblan
large eel, though thicker in pro
and much darker. It is nearly
thickness throughout: the head l
depressed, and obtuse: the tail
pressed; and the usual length is fr
to five feet, though it is sometimes
even eight. It is a native of Sou
rica, where it inhabits the larger riv
seat of the organs which produce thi
electrical effect is along the under

...s supports its existence: the smaller ...l other animals which happen to ... it being stupified, and thus falling ...rey to the electrical tyrant. Those ... to understand the nature of the ... which this electrical power is pro... ...ay find them minutely described by ... in vol. 65. of the Philosophical ...ions. The following observations ... in Brande's Dictionary: "Al... ...all outward appearance the Gym... ...nearly allied to the Eel, yet were ... of the body cut off which contains ...rest, respiratory, and generative ...all the parts, in fact, which are ... to the existence of the Gymnotus ...e fish.—it would present a short ...k-bodied form, very different from ...e eel. The long electric organs are ..., as it were, behind the true fish, ... give the Gymnotus its anguiliform ...The back bone and muscles are of ...extended with the electric organs ... support and motion; and the air... ...is continued along the produced ...nervous trunk, to give it convenient ...vity. Two long dorsal nerves are ... from the fifth and eighth cerebral ...r ordinary sensation and motion. ...al chord is continued along the ... column, for the exclusive supply ...ectrical organs. These organs are ...mber; two very large above, and ... ones below. The electricity dis... ... from them decomposes chemical ...ds, produces the spark, and mag... ...iron, as does that of the Torpedo. ...magnetizing power seems to be re... ...weaker, while the benumbing shock ...ansted to other animals is stronger ...any other electric fish."

...aldt has given a lively narrative of ...e of capture of the Gymnoti, em... ...by the Indians of South America. formidable. In fact, after the conflict had lasted a quarter of an hour, the mules and horses appeared less alarmed; they no longer erected their manes, and their eyes expressed less pain and terror. One no longer saw them struck down in the water; and the eels, instead of swimming to the attack, retreated from their assailants and approached the shore." The Indians now began to use their missiles; and by means of the long cord attached to the harpoon, jerked the fish out of the water without receiving any shock so long as the cord was dry. All the circumstances narrated by the celebrated philosopher, establish the close analogy between the Gymnotus and Torpedo in the vital phenomena attending the exercise of their extraordinary means of offence. The exercise is voluntary and exhaustive of the nervous energy; like voluntary muscular effort, it needs repose and nourishment to produce a fresh accumulation.

"I was so fortunate (says Professor Owen) as to witness the experiments performed by Professor Faraday on the large Gymnotus which was so long preserved alive at the Adelaide Gallery in London. That the most powerful shocks were received when one hand grasped the head and the other hand the tail of the Gymnotus, I had painful experience; especially at the wrists, the elbow, and across the back. But our distinguished experimenter showed us that the nearer the hands were together within certain limits, the less powerful was the shock. He demonstrated by the galvanometer that the direction of the electric current was always from the anterior parts of the animal to the posterior parts, and that the person touching the fish with both hands received only the discharge of the parts of the organs included between the points of contact. Needles were converted into magnets; iodine was obtained by polar decom...

biting Sumatra. In its dentition and spiny covering it closely resembles the Hedgehog tribe; but it has the long, naked, scaly tail and pointed muzzle of the Shrews. Its generic character has been given by Dr. Horsfield and Mr. Vigors: Head elongated, acuminated, compressed on the sides, flattish above; muzzle obtuse, elongated, and projecting forward considerably beyond the lower jaw; tongue rather smooth, large: auricles rounded, somewhat prominent, naked: eyes small; nostrils lateral, prominent, with the margins convoluted; vibrissæ elongated. Body rather robust; the short fur soft, but with distant, erect, subelongated hairs: tail rather long, smooth, naked, and scaly. Feet plantigrade, pentadactyle, the fore-feet with a rather short thumb. Claws narrow, curved, very acute, and retractile. The body, legs, and first half of the tail are black; the head, the neck, and the shoulders are white; and a black band passes over the eyes. Cuvier, in his "Règne Animal" (1829), observes that the genus *Gymnura* of MM. Vigors and Horsfield appears to approach Cladobates in its teeth, and the Shrews in its pointed muzzle and scaly tail. It has five unguiculated toes on all its feet, and rather stiff bristles projecting forth from the woolly hair. The species is called G. Raffflesii, in compliment to the accomplished founder of Singapore, Sir Stamford Raffles.

GYPAETUS, or BEARDED VULTURE. A genus of birds which may be considered as intermediate between the eagles and vultures. The Bearded Vulture (*Gypaëtus barbatus*), sometimes called the Bearded Griffin or *Lammergeyer*, is the largest bird of prey belonging to the Eastern Continent, and it appears to be the only Vulture which has ever been found in a wild state in Britain. It usually inhabits the high chains of mountains, and nestles in inaccessible acclivities. It is found in Europe as far north as Astracan, but is much more common in Spain, on the Pyrenees, Portugal, the isle of Elba, Tuscany, Malta, Turkey, and in the Archipelago; but is nowhere so abundant as in South Africa, in which quarter it attains a larger size than elsewhere. In the adult bird the head and upper part of the neck are of a dirty white colour; a black stripe extends from the base of the beak, and passes above the eyes; another, arising behind the eyes, passes over the ears; lower part of the neck, breast, and belly, orange-red; mantle, back, and wing-coverts, deep grey-brown, but on the centre of each feather is a white longitudinal stripe; wings and tail-feathers ashy-grey, the shafts white; tail long, very much graduated; beak and claws black; feet blue; iris orange, eye surrounded by a red lid. Length about four feet and a half.

BEARDED VULTURE.—(GYPAETUS BARBATUS.)

"Unlike the typical vultures," says Mr. Gould, "which are distinguished by their bare necks, indicative of their propensity for feeding on carrion, the Lammergeyer has the neck thickly covered with feathers, resembling those of the true eagles, with which it also accords in its bold and predatory habits, pouncing with violent impetuosity on animals exceeding itself in size; hence the young chamois, the wild goat, the mountain hare, and various species of birds find in it a formidable and ferocious enemy. Having seized its prey, the Lammergeyer devours it upon the spot, the straight form of their talons disabling them from carrying it to a distance. It refuses flesh in a state of putrefaction, unless sharply pressed by hunger; hence nature has limited this species as to numbers: while, on the other hand, to the Vultures, who are destined to clear the earth from animal matter in a state of decomposition, and thus render the utmost service to man in the countries where they abound, she has given an almost illimitable increase."

GYRINUS: GYRINIDÆ. A genus and family of aquatic Beetles, the type of which is known under the name of Whirligigs, or Water-flea, from its peculiar motions. They are in general of small or moderate size; and are to be seen, from the first fine days of spring till the end of autumn, on the surface of quiet waters, and even upon that of the sea, often appearing in great numbers, and appearing like brilliant points. They are active swimmers, and curvet about in every direction. Sometimes they remain stationary without the slightest motion; but no sooner are they approached, than they escape by darting under the surface of the water, and swimming off with the greatest agility. The four hind-legs are used as oars, and the anterior ones for seizing the prey: when they dart beneath the surface, a bubble of air like a silvery ball remains attached to the hind part of the body. When seized, they discharge a milky fluid, which spreads over the body, and probably produces the disagreeable odour which they then emit. There are several species found in this country, but it is not necessary to describe them separately. These beetles are almost the only water insects which exhibit a brilliant metallic lustre, a peculiarity dependent upon the habits of the insects which generally swim upon the surface of the water.

HADDOCK. (*Gadus æglefinus.*) This well-known Malacopterygious fish is nearly allied to the cod; and, like it, is a native of the Northern seas, where it assembles in prodigious shoals, visiting particular

coats at stated seasons. Nor is it by any means scarce on the shores of Britain or Ireland; immense quantities, indeed, are taken at different localities, particularly along our eastern coast; and as its flesh is sweet and wholesome, and can be preserved with facility, it is a fish of considerable value. The Haddock is generally about twelve or fourteen inches in length, and weighs from two to three pounds; though, occasionally, they are met with

HADDOCK.—[GADUS ÆGLEFINUS.]

nearly three feet long, and weighing ten or twelve pounds: the smaller or moderate sized ones, however, are most esteemed for the table. The body is long and slender; the head slopes suddenly down from the crown to the point of the nose; the lower jaw is longer than the upper, and furnished with a narrow band of teeth; the nostrils at the side are small; the eye is large, and the irides silvery; the head, shoulders, back, and upper part of the sides, are of a dull grayish hue; lower part of the sides and belly, silvery. On each side, in a large black spot, of which we shall again have to speak. The lateral line is black; the dorsal fins and tail dusky blends gray; pectoral, ventral, and anal fins lighter: the tail bifid. Their food is small fish, crustacea, and marine insects: they spawn in February and March; and they are in the best condition for the table from October to January. In stormy weather this fish is said to bathe itself in the coast at the bottom of the sea; and those which are taken shortly after are observed to have mud on their backs.

We are always loth to make allusion to ignorant superstitions, however popular they may be, unless we can furnish some rational solution for their existence; but they have sometimes taken such deep root, that not to mention, might almost seem to mention them. We of course allude to the "thumb and finger marks of St. Peter;" and shall therefore extract from Mr. Turnbull's excellent work the following remarks, as supplying additional information of a germane character; "Pennant says, 'Our countryman Turner suspected that the Haddock was the Opse or Asinus of the ancients. Different reasons have been assigned for giving this name to the species, some imagining it to be from the colour of the fish, others because it used to be carried on the backs of asses to market.' A different reason appears to us more likely to have suggested the name; the dark mark on the shoulder of the Haddock very frequently extends over the back and unites with the patch of the shoulder on the other side, forcibly reminding the observer of the dark stripe over the withers of the ass; and the superstition that assigns the mark to the Haddock to the impression St. Peter left with his fingers and thumb when he took the tribute-money out of a fish of this species, which has been transferred to the whole race of Haddocks ever since the miracle, may possibly have had reference, or even its origin, to the obvious similarity of this mark on the outer part of the body of the Haddock and of the humble animal which had borne the Christian Saviour. That the reference to St. Peter is gratuitous, is shown by the fact that the Haddock does not exist in the sea of the country where the miracle was performed." Independently of which, the Sea of Galilee is a large fresh water lake.

HÆMATOPUS, or OYSTER-CATCHER. A genus of wading birds, the best known species of which is the Common Oyster-Catcher, *H. ostralegus*. [See Oyster-Catcher.]

HAG. [See Gasterobranchus.]

HAIR-STREAK (BUTTERFLY). A name given to various species of *Rusticus*, of the genus Thecla.

HAKE. (*Gadus merluccius* of Linnæus.) This Malacopterygious fish inhabits the seas of the north of Europe and the Mediterranean: it is also found on the western and southern coasts of England, as well as on various parts of the coast of Ireland. It is of a lengthened form, generally from one to two feet, but sometimes more: the head is rather large, broad and flat at the top, but compressed on the sides; wide mouth; lower jaw the longest; teeth slender and sharp, with a single row in each jaw; the colour of the body is a dusky brown above, and lighter beneath; dorsal and ventral fins dark; ventral and anal fins light brown; the pectoral and ventral fins are of moderate size, and of a sharpened shape; and the tail is nearly even at the end. It is salted and dried in the manner of cod, haddock, &c., but is not considered as a delicate fish either in its fresh or salted state, and is rarely admitted to the tables of the affluent: it forms, however, a very useful article of food for the lower orders in many parts both of our own and other countries. It is a very voracious fish; and when pilchards approach the shores, it follows them, continuing in great numbers through the winter; so that when pilchards are seen in a seine, on the Cornish coast, many Hakes are generally found inclosed with them. By Dr. Fleming and other naturalists, this fish is regarded as belonging to a distinct genus, characterised by having one anal and two dorsal fins. (*Merluccius.*)

HALCYON. A genus of the Kingfisher family, of which there are many species:—of these we may specify the Sacred Kingfisher (*Halcyon sanctus*), which is generally distributed over the Australian continent, and feeds on various insects and reptiles; as Mantidæ, grasshoppers, caterpillars, lizards, and small snakes; and Mr. Gould found that specimens killed in the vicinity of salt marshes had their stomachs literally crammed with crabs and other crustaceous

HALIBUT.—(HIPPOGLOSSUS VULGARIS.)

mits of being salted. In some of the smaller species, which are found in the Mediterranean, the eyes look towards the left side, instead of towards the right, the latter being the ordinary rule of the family; and when that happens it is said to be "reversed."

HALICHÆRUS. A genus of Seals. [See SEAL.]

HALICHONDRIA. A genus of Sponges, in which the cartilaginous skeleton is strengthened by siliceous spiculæ. See Dr. Fleming's British Animals, and Dr. Johnston's British Sponges, for an account of the many entirely British species.

HALICORE. A genus of Cetaceous animals, found in the Eastern seas. [See DUGONG.]

HALIOTIS; HALIOTIDÆ. A genus and family of Gasteropodous Mollusca, not widely different from the Limpets, and having the Haliotis or Ear-shell as the type. These splendid shells are remarkable for the pearly iridescence of the inner surface, and the row of holes following the course of the spire. [See EAR-SHELL.]

HALMATURUS. A genus of Marsupialia belonging to the Kangaroo family. As an example we may give Parry's Kangaroo, *Halmaturus Parryi*, a species familiar to the colonists and natives of New South Wales. It is very shy, escapes with great fleetness from its pursuers, and inhabits the mountainous parts. It is easily tamed, becoming very familiar. The male measures five feet from the nose to the end of the tail. The

implanted nearly on the middle of the
head; and the hindmost thighs are
thick, being formed for leaping. The
face of the body is smooth, generally poli
and often prettily or brilliantly colo
The claws are very thick at one end
deeply notched towards the other, and
minate with a long, curved, and sharp
which enables the insect to lay hold
upon the leaves of the plants on which
live. These beetles eat the leaves of
tables, preferring especially plants of
cabbage, turnip, mustard, cress, radish
horse-radish kind, or those which, in
nical language, are called cruciferous p
to which they are often exceedingly
rious. The flea-beetles conceal themse
during the winter, in dry places, under st
in tufts of withered grass, and in chin
walls. They lay their eggs in the sp
upon the leaves of the plants upon w
they feed. The larvæ of the smaller
burrow into the leaves, and eat the
pulpy substance under the skin, for
therein little winding passages, in w
they finally complete their transforma
Hence the plants suffer as much from
depredations of the larvæ as from the
the beetles, a fact that has too often
overlooked. The larvæ of the larger
live exposed on the surface of the
which they devour, till they come to
growth, and go into the ground, where
are changed to pupæ, and soon after
to beetles. The mining larvæ are
slender grubs, which arrive at maturity
to pupæ, and then to beetles in a few w
Hence there is a constant succession of
insects, in their various states, throu
the summer. One of the most destru
species of this family is the Turni
(*Haltica nemorum*), [which see].

HAMSTER. (*Cricetus frumentarius*
rodent animal, of the rat tribe, distingu
by two enormous cheek pouches, which
hold a quarter of a pint, and by its rem
able instincts. It inhabits the sandy de
of the north of Europe and Asia. An

, and on each side the body are three spots, those on the shoulders being gest: the ears are rather large, and d. On the hind feet are five toes, and fore feet are four, with a claw in f a fifth. They sometimes vary in and the male is invariably larger he female. The quantity of grain they consume is very great; and hey cannot devour, they carry off in heek-pouches, and deposit in their r their winter subsistence. Their gs are formed under the earth, and of more or fewer apartments, ac- to the age of the animal: a young r makes them hardly a foot deep; ne sinks them to the depth of four et, and the whole diameter of the , taking in all its habitations, is to eight or ten feet. The principal is lined with dried grass, and serves ing: the others are vaults destined nservation of provisions, of which es a great quantity during the au- Each hole has two apertures; the nding obliquely, and the other per- ly, and it is through the latter nimal makes its ingress and egress. of the females, who never reside males, have more numerous pas- e female breeds two or three times ducing from six to ten, and some- e: the growth of the young is , and at about the age of three old one forces them out of the shift for themselves.

mster is carnivorous as well as s, for though it feeds on all kinds well as corn, it occasionally at- levours the smaller kinds of ani- the approach of winter the Ham- into his subterranean abode, the hich he closes with great care; remaining tranquil and secure, s collected store till the frost be- re: he then falls into a profound nd in that dormant state con- d up, apparently lifeless, his limbs and his body perfectly cold. This f the Hamster has been generally the effect of cold alone: but more rvations have proved, that unless n depth beneath the surface, so as nd the access of the external air, does not fall into its torpid state. he severest cold on the surface does it. On the contrary, when dug burrow and exposed to the air, it wakes in a few hours. The waking mster is a gradual operation: he the rigidity of his limbs, then makes irations, at long intervals; after egins to move his limbs, open his and utters an unpleasant rattling e at length opens his eyes, and rs to rise, but reels about for some lf in a state of intoxication, till at perfectly recovers his usual powers. xposed to a cold air he is sometimes e in waking; but in a warmer air ition is effected in half the time. racter which naturalists have given animals is very unfavourable. They constantly reject all society with one another, and they will not only destroy every animal which they are capable of conquering but will fight, kill, and devour their own species: yet, fierce as they are, they quail before their deadly enemy the polecat, which chases them into their holes, and unrelentingly destroys them. The fur of the Hamster is said to be valuable; and the peasant who 'goes a *hamster nesting*' in the winter, obtains not only the skin of the animal, but his hoard, which is said commonly to amount to two bushels of good grain in each magazine. Buffon says, that in Gotha, where these animals were proscribed on account of their vast devastations among the corn, 146,132 of their skins were delivered at the Hotel de Ville of the capital in the course of three years.

HARE. (*Lepus.*) A well-known genus of Rodent mammalia, containing several species. We shall first describe—

The COMMON HARE (*Lepus timidus*), which possesses all the characters of the genus *Lepus* in such a degree as to form its most perfect type. Its hearing and sight are most acute; its timidity is unequalled; and its swiftness is surpassed by none. The general length of the Hare is about two feet; the colour a subferruginous gray, with the chin and belly white: the throat and breast ferruginous, and

COMMON HARE.—(LEPUS TIMIDUS.)

the tips of the ears blackish: the tail is blackish above, and white below: the feet are covered beneath as well as above with fur; the upper lip is divided; the eyes are large, prominent, and placed laterally; and they are said to be constantly open even during sleep: the hinder legs are much longer than the fore legs; the feet are hairy; and the tail is short and turned up. Its favourite residence is in rich and somewhat dry and flat grounds, and it is rarely discovered in very hilly or mountainous situations. It feeds principally by night, and remains concealed during the day in its *form*, beneath some bush or slight shelter. To this spot it constantly returns, and becomes so attached to it, that it is with difficulty compelled to abandon it: in choosing its place of rest, however, it is governed by the seasons, and while a cool and shady spot is its resort in summer, it selects for its winter lair a situation where it can best receive the genial warmth of the sun.

The Hare is a very prolific animal, generally producing three or four young at a time, and breeding several times in a year. The eyes of the young are open at birth: the dam suckles them about twenty days, after which they leave her, and procure their

this respect over its pursuers. These animals seldom migrate far from the spot where they are produced; but each makes a form at a small distance, showing a predilection rather for the place of their nativity than the society of their kind. They pair in February; and as they only quit their couch in the night time to obtain food, so they never leave it for the companionship of their mates but at the same silent hour: often, indeed, are they observed by moonlight, playing and skipping about in the most sportive manner; but the slightest breeze, or even the falling of a leaf, is sufficient to disturb their revels; and they instantly fly off, each pursuing a different track.

In order to enable this creature to perceive the most distant approaches of danger, nature has provided it with very long ears, which, like tubes applied to the auditory organs of deaf persons, convey to it such sounds as are remote; and the motions of the Hare are directed accordingly. Its large prominent eyes being placed so far backward as to receive the rays of light on every side, it can almost see distinctly behind while it runs directly forward. The muscles of its body being strong, and unencumbered with fat, it has no superfluous burden of flesh to carry: and to assist it in escaping from its pursuers, the hinder legs are considerably longer than the fore, which adds to the swiftness of its motions. But they generally exhaust their powers by their first efforts, and are consequently much more easily caught than foxes, though these wily creatures are slow when compared with them. When the Hare hears the hounds at a distance, it flies for some time from a natural impulse, till having gained some hill or rising ground, and left the dogs so far behind that their cries no longer reach its ears, it stops, rears on its hinder legs, and looks back, for the purpose of satisfying itself whether its pursuers are still in sight or not: but the

surprise or which wounded, by sharp cry of an infant. Its numerous and powerful. Ever the dog kind pursues it by instin and the weasel tribes exercise a to ensnare it; and birds of p adders, &c. drive it from its fo larly during the summer season the more destructive pursuits contribute to thin the numb animals, which from their pro would otherwise multiply to an degree.

The flesh is now much pr peculiar flavour, as it was by th but it was forbidden to be eaten Jews, Mahometans, and anci The fur, until of late years, when so generally used, was of great in the manufacture of hats; a parts of the continent it is also cloth.

The Irish Hare (*Lepus Hibe* ally considered a species of t Hare of England, is said by Mr "British Quadrupeds," to be distinct. In support of his opin "The characters in which it differs from the latter are as foll somewhat larger; the head is rat the ears are even shorter than while those of the English Hare inch longer; the limbs are pe rather shorter; and the hinder so much exceed the fore legs in character of the fur is also rem ferent: it is composed exclusi uniform soft and shorter hair w English species is mixed with tipped long hairs, which give mottled appearance of that an therefore of a uniform reddish b on the back and sides. The ears gray, blackish at the tip, with

y playful and amusing.
h of September it changes
sumes its summer dress
t in the intensely cold
it continues white all the
as been sometimes found
t; a variety which is also
nce occasionally in the

When the winter has
severe, the Varying Hare
migrate from the frozen
d to descend, in troops of
nd, into the plains and
there they remained till
g.

and western provinces of
mixed breed of Hares,
nly a partial loss of its
s, and the more exposed
and legs, becoming white
ths, while the other parts
l. This variety is by the
Russak: and prodigious
in snares for the sake of
the Russians and Tartars,
ddical ancestors, holding
in the utmost detestation.

HARE (*Lepus Americanus*)
r than a rabbit, by which
well known throughout
a of that vast continent.
r is dark brown on the
head, lighter on the sides.
lour below; the ears are
white, tipped with brown,
behind; tail dark above,
aving the under surface
ore legs are shorter and
in proportion than those
In the middle and south-
ge in the colour of the hair
remarkable as it is farther
ecomes nearly white. It
America, but is generally
and shot or caught by
a common box-trap, the
ost usual mode. It has

A singular mode of taking furred animals out of hollow trees, logs, &c. is practised in the south, called 'twisting.' I once saw it performed on a rabbit (so called); the dogs had tracked him and driven him to his hole in the bottom of a hollow hickory tree. The hole was too small to admit the hunter's hand with convenience, so we made the negroes cut down the tree, which was soon effected. When it fell, we watched the butt, to see that the rabbit did not run out, but he did not make his appearance. The hunter then got some long slender switches, and probing the hollow, found that the rabbit was at the farther end several feet up the trunk. He now commenced turning the switch round in one direction, a great many times, until the tip of it had become so entangled in the animal's fur, as to bear a strong pull. He then began to pull steadily out, but the rabbit held on as well as he could, and made considerable resistance, crying most piteously, like a child; at last the skin gave way, and a great mass of fur and skin came out attached to the switch, pulled off by main force. He now took a new switch, and commenced twisting again, and this time pulled the little thing down, but the skin was torn almost completely off the loins and thighs of the poor little creature, and so tightly twisted about the end of the stick, that we were obliged to cut the skin to get the animal free!" A more cold-blooded or barbarous cruelty, practised on a harmless and defenceless animal, it is scarcely possible to conceive; and were it not for the undoubted veracity of the writer we should reject it as well on the score of its incredibility as of its inhumanity.

The CAPE HARE. (*Lepus Capensis.*) This species, which is about the size of the one last described, inhabits the country near the Cape of Good Hope, frequenting the most rocky and mountainous situations, and taking up its abode in the fissures of the cliffs. The ears are long, broad in the middle, naked, and rose-coloured on the outside, and covered with short grey hairs

hilly places in Dauria and Mongolia, and is said to extend as far as Tibet. In the colour of its flesh it agrees with the rabbit, but differs both from that animal and the hare in its manners; neither burrowing in the ground, like the former, nor running far when pursued, like the latter; but instantly taking refuge in the holes of rocks. [For Alpine Lagomys, Calling Hare, &c., see LAGOMYS.]

HARELDA. A genus of Ducks, containing the Long-tailed Duck (*H. glacialis*). [See DUCK.]

HARENGUS. [See HERRING.]

HARFANG. The Great Snowy Owl. [See OWL.]

HARLEQUIN BEETLE. [See ACROCISUS.]

HARLEQUIN DUCK. (*Clangula histrionica*). A magnificent species found on

HARLEQUIN DUCK.
(CLANGULA HISTRIONICA.)

both continents; it derives its name from the singularity of its markings. It is seventeen inches in length, and twenty-eight inches in extent: the bill is of a lead colour, tipped with red; upper part of the head black; between the eye and bill a broad space of white, extending over the eye, and ending in reddish; behind the ear, a similar spot; neck black, ending below in a circle of white; breast deep slate; shoulders marked with a semicircle of white; belly black; sides chestnut; body above, black, or deep slate; some of the scapulars white; greater wing-coverts tipt with white; legs and feet deep ash; vent and pointed tail black. It swims and dives well; flies swift, and to a great height; and has a whistling note. The female lays ten white eggs on the grass; the young are prettily speckled. At Hudson's Bay, where it breeds, and is said to frequent the small rivulets inland, it is called the Painted Duck; at Newfoundland and along the coast of New England, the Lord. It is an admirable diver, and is often seen in deep water, considerably out at sea.

HARPA, or HARP-SHELL. A beautiful genus of shells, so regularly marked with parallel longitudinal ribs on the outer surface, as to suggest at the first glance the idea of the stringed instrument to which it owes its name. The upper end of each rib is projected and pointed; spire short, last whorl large and deeply notched; outer lip thickened, and is supposed to have no operculum. The Mollusc which inhabits it has the head large; mouth open below; destitute of a proboscis; but having two tentacula, with eyes in the middle; foot large. It has been asserted by some naturalists that the animal can, when attacked by an enemy, disembarrass itself of part of its foot, and retire entirely within its shell. The principal localities of this genus are the Red Sea and the Indian and South American Oceans. There are several species, all handsome, and some rare; among them the *Harpa scalicosta*, which is very rare, and the *Harpa imperialis*, from the Mauritius, the markings of which are very elegant; but perhaps the more abundant species here figured, *Harpa ventricosa*, is as beautiful in form and colouring as any species of this marine carnivorous genus.

HARP SHELL AND ANIMAL.
(HARPA VENTRICOSA.)

HARP-SEAL. The Greenland Seal. [See SEAL.]

HARPY EAGLE. (*Thrasaëtus.*) A genus of Accipitrine Birds found in South America; celebrated for the enormous development of their beak and legs, and the consequent strength and power they evince in mastering their prey. The following short but characteristic notice of this bird occurs

HARPY EAGLE.—(THRASAËTUS HARPYIA.)

in "Edwards's Voyage up the Amazon." "While absent upon this excursion, Mr. Bradley, an Irishman, who trades upon the Upper Amazon, arrived at Mr. Stanley's

r birds and curiosities
e of the former was a
most ferocious look-
harpy's crest and a
respondence. He was
garden, and before
of his powers. With
hing eyes, uttering a
ounced upon a young
thought had torn his
is body. The whole
as wild with fear." No
lass could look more
than a noble specimen
agle, which we saw
e Zoological Gardens,
hole aspect was that
ted power; and even
crest added much to

well-known kind of
his sagacity in tracing,
ding his game. There
ot all differing in their
adapted for one sort of
another. The best
dich the name is more

RIER.

, is the Harrier used
, which is supposed to
produced by a cross
d and the Beagle. The
rom sixteen to eighteen

ns given to a Stag or
as completed his fifth

[See CICADA *septem-*

e GROSBEAK.]

ie.) The name by which
r, closely allied to the
ted; as the Goshawk,
c., which will be found
re names. The beak of
that of the Falcons in
ing curved from the
are shorter, and want
th are characteristic of
mily. The most pow-
und in cold countries,
tricts where there are
their prey near the
e whole, none is more
s in pursuit of its prey
wk (which see). In the
and Mitchell's genera

of Birds will be found descriptions of the numerous genera, with references to the greater part of the species, and figures of most of the typical forms. In the List of Birds in the British Museum collection, which is exceedingly rich in the Hawk tribe, will be seen how numerous the species are. We refer those desirous of further information to those two works.

HAWK-OWL. [See OWLS.]

HAZEL WORM, a name sometimes applied to the little lizard *Anguis fragilis*, more commonly called the Blind-worm [which see].

HEATHCOCK. [See GROUSE.]

HEDGEHOG. (*Erinaceus Europæus.*) The common Hedgehog is found in most of the temperate parts of Europe and Asia; and though it has a formidable appearance, it is one of the most harmless creatures in existence. It is an insectivorous quadruped, whose generic character may be thus described:—the back covered with sharp strong spines, about an inch long, with the power of rolling itself up in a ball by means of appropriate muscles; muzzle pointed; tail short; and each foot five-toed and armed with robust claws: the head is very conical; the ears short, broad, and rounded; the eyes prominent; the body oblong, and conical above; and the legs short, almost naked, and of a dusky colour. It is about ten inches in length, and its colour is generally a grey-brown. Its close covering of sharp spines, which are firmly fixed in its tough skin, and sufficiently elastic to bear great violence without breaking, protects it from falls or blows, and as effectually secures it from the attacks of an enemy; for when molested, it instantly rolls itself into a kind of ball, and presents nothing but its prickles to the foe; and the more the animal is irritated and alarmed, the more firmly does it contract itself, and the more stiff and strong does its bristly panoply become. Thus rolled up, it patiently waits till the danger is past: the cat, the weasel, the ferret, and the martin soon decline the combat; and though a well-trained wire-haired terrier, or a fox, may now and then be found to open a Hedgehog, it generally remains impenetrable and secure. From this state of security, in fact, it is not easily forced; scarcely anything but cold water obliging it to unfold itself.

The usual food of the Hedgehog is beetles, worms, slugs, and snails; it is also said to devour fruit, the roots of plants, and certain other vegetable substances, while it shows itself not so restricted as has been thought in its choice of animal food; eggs, frogs, toads, mice, and even snakes occasionally, serving for its repast. The Hedgehog is strictly nocturnal, remaining coiled up in its retreat during the day, and wandering about nearly all the night in search of food. It generally resides in small thickets, in hedges, or in ditches covered with bushes, making a hole about six or eight inches deep, which it lines with moss, grass, or leaves. The hibernation of the Hedgehog is undoubted;

although it lays up no store for the winter, it retires to its hole, and in its warm, soft nest of moss and leaves, it lies secure from the rigours of the frost and the violence of the tempest, passing the dreary season in a profoundly torpid state. The female produces from two to four young ones early in the summer, which at their birth are blind, and covered with soft white spines, which in two or three days become hard and elastic. The flesh of these animals, though generally rejected as human food, is said to be very delicate.

Many absurd errors prevail as to the habits of this animal. It is charged with sucking the teats of cows by night, and wounding their udders with its spines, thereby causing those ulcerations which are sometimes observed: from this false accusation, however, the smallness of its mouth is a sufficient exculpation. It is also said to be very destructive to gardens and orchards, by rolling itself among fruit, and thus carrying off a quantity on its spines: but its spines are evidently so disposed, that no fruit would stick on them, even were the experiment attempted. But so far from being mischievous and injurious, the Hedgehog is found to be of real use, and is often kept for the purpose of ridding houses of the numerous cockroaches by which some are infested; and it is well known to devour many destructive insects of the beetle kind and others, which are injurious to the farmer and gardener.

In the "Journal of a Naturalist," this animal is thus noticed:—"Notwithstanding all the persecutions from prejudice and wantonness to which the Hedgehog is exposed, it is yet common with us; sleeping by day in a bed of leaves and moss, under the cover of a very thick bramble or furzebush, and at times in some hollow stump of a tree. It creeps out in the summer evenings; and, running about with more agility than its dull appearance promises, feeds on dew-worms and beetles, which it finds among the herbage, but retires with trepidation at the approach of man. In the autumn, crabs, fruits, haws, and the common fruits of the hedge, constitute its diet. In the winter, covering itself deeply in moss and leaves, it sleeps during the severe weather; and, when drawn out from its bed, scarcely anything of the creature is to be observed, it exhibiting only a ball of leaves, which it seems to attach to its spines by repeatedly rolling itself round in its nest."

The Siberian or Long-eared Hedgehog. (*Erinaceus auritus.*) This species is in general larger than the common or European, and may be easily distinguished by its ears, which are large, oval, open, and naked, with soft whitish hair on the inside, and edged with brown; the upper part of the animal is covered with slender brown spines, with a whitish ring near the base, and another towards the tip, and the legs and belly are clothed with soft white fur. In its general manner and habits this species is said to resemble the common Hedgehog. The Eared Hedgehog appears to be only a variety of the common species; the however, is somewhat shorter and the more blunt; there is no appearance ternal ears; it is shorter; and the animal is of a whitish hue.

HEDGE-SPARROW. (See Spar

HELAMYS, or JUMPING HARE. animal constitutes a genus of mamm the order *Rodentia*, allied to the Jerbo head is large, the tail long, the fore l very short in comparison with the They have four molars, each composed laminæ; their lower incisors are trun

AFRICAN JUMPING HARE (HELAMYS CAFFER.)

the fore feet have five toes, furnishe long pointed nails; the hind feet ha toes, which are separate as far as the of the metatarsus, and furnished with claws, almost resembling hoofs. The *Helamys caffer* is pale fulvous, with tufted tail, black at the tip. It is as as a rabbit, and, like it, inhabits dee rows. Our cut exhibits one about to while another is at the mouth of it row.

HELARCTOS. A genus of Bears in India and the Eastern Islands. The and Java Bears may be given as illustr [See Bear.]

HELICINA. A genus of Molluscs, in America and the West Indies. Sev habit the sea, but others are terrestrial, feeding upon trees or subsisting on the table productions of the fields and ga The head of the animal is furnished proboscis and two tentacula, with e the base on tubercles; foot short. The is of a flattened shape, mouth semi closed by a horny operculum, which is of concentric layers, and permanent tached to the foot; outer lip thickene reflected, inner lip spread over the whorl, terminating in a point. The a great many species.

HELICONIDÆ. A family of Le terous insects; in which the wings v shape, but are often very long and n and the discoidal cell of the hind w always closed; the antennæ are cl clavate; the palpi are short, and whic

at the base, the second joint being generally clothed with hairs directed upwards at its extremity. The caterpillars are cylindrical, and either spinose or furnished with several pairs of long fleshy appendages; and the chrysalides are often ornamented with brilliant golden spots. The species belonging to this family are entirely exotic, of a moderately large size, and of very varied colours. In some of the species the wings are quite denuded of scales and in many they are but slightly covered. One of the species, *Euploea* (*Danais*) *hamata*, is said to be so abundant in New Holland, that it occasionally darkens the air from the *clouds* of them. By many authors this and the allied genera are placed in the separate family *Danaidæ*. We must refer our readers to Mr. Doubleday's elaborate letter-press to his work on the Diurnal Lepidoptera, so beautifully illustrated by Mr. Hewitson.

HELICTIS. A genus of carnivorous Quadrupeds allied to the Skunks, of which there are at least two species, one found in China, where it was discovered by Mr. Reeves, the other in Nepal, whence it was sent by Mr. Hodgson.

HELIORNIS. A genus of Birds found in South America. [See FINFOOT.]

HELIX: HELICIDÆ. The general name of a large and most extensively diffused class of Molluscous animals with a shelly covering. It is equally adapted to the hottest and the coldest climates, the most cultivated and the most barren situations. In the Cuvierian system this is the type of a family of terrestrial and air-breathing Gasteropods. The common Garden Snail of this country, and the Edible Snail of France and Italy, are well-known examples of this family; but in tropical climates more striking ones are to be found. The work of Dr. Pfeiffer is the latest and the most elaborate on this group. In the works of Wood, Sowerby, Reeve and others, a great number of species are figured. An inspection of the cases containing them in the British Museum will show how varied their forms are, and how beautifully coloured are many of the species. There are some brought from the Philippine Islands by Mr. Cuming, which when wetted lose their colour, but regain it when dry. This is owing to the nature of the epidermis. [See SNAIL.]

HELMET-SHELL. (*Cassis.*) A family of shells, of which there are several species, mostly found on tropical shores, but some

HELMET-SHELL.—(CASSIS DECUSSATA.)

are also met with in the Mediterranean. They are inhabited by molluscous animals, some of which grow to a very large size, requiring of course a corresponding magnitude of shell. They live at some distance from the shore, on the sand, into which they occasionally burrow, so as to hide themselves. The back of the Helmet-shell is convex, and the under part flat; the mouth is long and narrow; the lip is strongly serrated, and rises into a high thick border or ledge on the back; and the pillar is generally strongly toothed, and beset with small asperities. The shells of the *Cassis rufa* and other species are beautifully sculptured by Italian artists in imitation of antique cameos, the different layers of colouring matter resembling the onyx and other precious stones formerly used for this purpose.

Upon this subject some interesting particulars were detailed by Mr. J. E. Gray, at a meeting of the Society of Arts, held April 21, 1847. He observed that numerous attempts have been made to substitute various materials, such as porcelain and glass, for the ancient cameos; but their great inferiority has caused them to be neglected. The best and now most used substitutes are shells; several kinds of which afford the necessary difference of colour, and at the same time are soft enough to be worked with ease and hard enough to resist wear. The shells used are those of the flesh-eating univalves, which are peculiar as being formed of three layers of calcareous matters, each layer being a perpendicular lamina placed side by side. The cameo cutter selects those shells which have the three layers composed of different colours, as they afford him the means of relieving his work; but the kinds now employed, and which experience has taught him are best for his purpose, are the Bull's Mouth (*Cassis rufa*) from the Indian Seas, the Black Helmet (*Cassis Madagascariensis*), a West Indian shell, the Horned Helmet (*Cassis cornuta*), from Madagascar, and the Queen Conch (*Strombus gigas*), a native of the West Indies. The two first are the best shells. After detailing the peculiarities of these shells, Mr. Gray proceeded to give an account of the progress of the art, which was confined to Rome for upwards of forty years, and to Italy until the last twenty years, at which period an Italian commenced the making of them in Paris; and now about three hundred persons are employed in this branch of trade in that city. The number of shells used annually thirty years ago was about three hundred, the whole of which were sent from England; the value of each shell in Rome being 30s. To show the increase of this trade, the number of shells used in France last year was nearly as follows:

		Average Price.	Value.
Bull's Mouth -	80,000	1s. 8d.	£6,400
Black Helmet -	8,000	5s.	1,800
Horned Helmet	500	2s. 6d.	60
Queen Conch -	1,200	1s. 2½d.	700
	100,200 shells.		Value 8,960

The average value of the large cameos made in Paris is about six francs each, giving a sterling value of 32,000*l.*, and the value of the *small* cameos is about 8,000*l.*, giving a total value of the cameos produced in Paris for

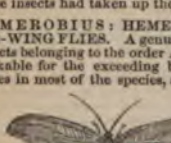
the last year of 40,000*l.*, while in England not more than six persons are employed in this trade. *Athenæum*, May 1. 1847.

HELOPIDÆ. A family of insects belonging to the order *Coleoptera*, division *Heteromera*, in which the antennæ are inserted near the eyes, and the terminal joint is always the longest, covered at the base by

HELOPS PICEUS.

the margin of the head, filiform, or slightly thickened at the tip, elytra not soldered together; maxillary palpi, with the last joint largest, hatchet-shaped; eyes generally kidney-shaped. The larvæ generally filiform, with smooth shining bodies and very short feet. They are found in old wood, while the perfect insects are frequently found upon flowers, or below the bark of trees. This family consists of several genera, most of which are exotic. Mr. Paget, of Yarmouth, in his Natural History of that town, mentions that the larva of the common *Helops violaceus* injured the wood of a window-frame very much, in which several of these insects had taken up their abode.

HEMEROBIUS; HEMEROBIDÆ. LACE-WING FLIES. A genus and family of insects belonging to the order *Neuroptera*; remarkable for the exceeding brilliancy of the eyes in most of the species, and for the



LACE-WING FLY.—(HEMEROBIUS.)

delicate structure and varied colours of their long reticulated wings; so that, although of small size, they are very conspicuous. They deposit their eggs upon plants, attaching them at the extremity of a long slender footstalk, the base of which is fastened to the leaf; thus fixed in small clusters, they have the appearance of minute fungi. The larvæ of these insects are extremely ravenous; and, as they feed on the *Aphides*, or plant-lice, are highly beneficial. During the summer they arrive at their full growth in about fifteen days; they then spin a silken cocoon, in which they enter as inactive pupæ, and there remain during the winter.

HEMIDACTYLUS. A genus of Lizards belonging to the Gecko family, in which the tail is depressed, angular above, with cross rows of spines, the toes being free. The species are found in various parts of the world, and will be found described in Mr. Gray's Catalogue of Reptiles; one species seems to be common on the shores of the Mediterranean.

HEMIPODIUS. A genus of Gallinaceous Birds allied to the Quails, of which there are very many species in Africa and Asia chiefly. Colonel Sykes has described many of the East India species. We must refer to Gray's and Mitchell's Genera of Birds for a list of the species and figures of the form, and limit ourselves to the notice of a species figured in the work of Mr. Gould, where it is called the SWIFT-FLYING HEMIPODE. This bird inhabits New South Wales, and is the "Little Quail" of the colonists. The male is little more than half the size of the female. It breeds in September and October: the nest is slightly constructed of grasses, placed in a shallow depression of the ground, under the shelter of a small tuft of grass: eggs four in number. The Hemipodius flies so close as to be nearly trodden on before it will rise, and, when flushed, flies off with such rapidity as to make it very difficult to shoot.

HEMIPTERA. An order of Insects characterized by having a horny beak for suction; four wings, whereof the uppermost are generally thick at the base, with thinner extremities, which lie flat, and cross each other on the top of the back, or are of uniform thickness throughout, and slope at the sides like a roof. Transformation partial. Larvæ and pupæ nearly like the adult insect, but wanting wings.—The various kinds of field and house bugs give out a strong and disagreeable smell. Many of them (some *Pentatomidæ* and *Lygæidæ*, *Cimicidæ*, *Reduviadæ*, *Hydrometridæ*, *Naucoridæ*, and *Notonectidæ*) live entirely on the juices of animals, and by this means destroy great numbers of noxious insects; some are of much service in the arts, affording us the costly cochineal, scarlet grain, lac, and manna; but the benefits derived from these are more than counterbalanced by the injuries committed by the domestic kinds, and by the numerous tribes of plant-bugs, locusts or cicadæ, tree-hoppers, plant-lice, bark lice, mealy bugs, and the like, that suck the juices of plants, and require the greatest care and watchfulness on our part to keep them in check. The works of Burmeister, Amyot, and Servillia, Meyer, Hahton and others may be referred to for the species, which are very numerous, and often most beautifully coloured, the colour and odour being by no means in harmony.

HEN. The general name of the female among the feathered tribes, but more especially applied to the female of the gallinaceous kind.

HEN-HARRIER. (*Circus cyaneus.*) This bird is a species of hawk; about eighteen inches in length, and three feet in extent from the tips of the wings extended. The bill is black, and covered at the base with

feathers; cere, irides, and edges
ds, yellow: the upper parts of
bluish gray, mixed with light
ly; the breast and under-coverts
white, the former streaked with
n, and the latter marked with
ame: the wings and tail are a
variegated with black; and the
g, slender, and yellow. The
feeds on birds and reptiles; it
mming along the surface of the
arch of prey, and is extremely
to young poultry and the fea-
. It makes its nest on the
lays four eggs of a reddish
a few white spots.

S. A beautiful genus of Crus-
in South America, and so named
-coloured marking. The genus
aloppa, and belongs to the same

DÆ. A family of Lepidopter-
in the section HETEROCERA
g with the first group of La-
TURNA). It is distinguished by
ntennæ very short and filiform,
ed to the tip; the spiral tongue
short or obsolete; and the
generally obsolete; the wings
d deflexed in repose; the ab-
elongated, its extremity being
to a long ovipositor, capable of
awn, or introduced into the
e bark of trees, &c. The cater-
xteen-footed fleshy grubs; and
he roots of vegetables or the
ding trees: when full grown,
t a cocoon of the refuse of what
en feeding upon. The chrysalis
transverse rows of fine reflexed
e abdominal segments, which
ect whilst making its efforts to
its confinement and assume the
. The *Hepialidæ* are called
the rapidity of their flight,
place during the twilight. Some
are very remarkable, particu-
LUS VIRESCENS, a large spe-
w Zealand, described by Mr.
The caterpillar of this is very
ttached by a fungus; which en-
ts it into a vegetable substance,
tion and its pedicel projecting
. This fungus is the *Sphæria*
ooker (*S. erucorum* of Mulsant.)
most striking Hepialidæ of this
Hepialus Humuli, or the Ghost
Cossus ligniperda, or the Goat
see).

S. [See GHOST-MOTH.]

CRAB. The name given to
cies of the family *Paguridæ*,
y empty shells, in which they
soft and otherwise easily injured
CRAB: PAGURUS.]

(*Ardea*.) Though birds of the
ck, and the Heron kind, have
inity to each other, the Heron
nguished by its smaller size, its
and particularly by the middle
claw on each foot, which is serrated, for the better seizing and securing its slippery prey. Herons reside on the banks of lakes and rivers, or in marshy places: their food consists of fishes and their fry, frogs, and field mice, as well as all sorts of insects, snails, and worms. They build in large societies in the same place; and when they fly, their neck is contracted and folded over their back, and their legs are extended.

The COMMON HERON (*Ardea cinerea*) is remarkably light in proportion to its bulk, scarcely weighing three pounds and a half, though its length is upwards of three feet, and its extended breadth above five. The bill is six inches long, straight, pointed, and strong; the upper mandible is of a yellowish horn colour, the under one yellow: the forehead, neck, middle of the belly, edge of the wing, and the thighs, are of a pure white; the occiput, the sides of the breast, and those of the body, of a deep black: the fore part of the neck is adorned with large longitudinal spots of black and gray; the back and wings are blue gray. A bare greenish skin is extended from the beak beyond the eyes, the irides of which are yellow, giving them a fierce and piercing aspect. The back part of the head is ornamented with several elongated narrow black feathers, the two middle of which are upwards of eight inches in length; the whole forming an elegant pendent crest; the feathers of the scapulars are also elongated, and fall over the back in fine disunited plumes. The tail is composed of twelve short cinereous feathers; the legs are of a dirty green colour, long, and bare above the knees; and the inner edge of the middle claw is finely serrated. The female is destitute of the long crest of the male, having only a short plume of dusky feathers; and in general her plumage is gray: the same remarks are also nearly applicable to the young birds. In the breeding season they congregate in large societies, and, like the rooks, build their nests on trees, with sticks, lined with dried grass, wool, and other warm materials. The female lays from four to six eggs, of a pale greenish blue colour.

This bird commits great devastation in ponds and shallow waters. As a proof of its appetite, it is asserted by Willoughby and others, that a single Heron will destroy fifty small roach and dace, one day with another. Though it generally takes its prey by wading into the water, and waiting patiently for its approach, it frequently also catches it whilst on the wing; but this is only in shallow waters, where it is able to dart with more certainty than in the deep; for in this case, though the fish does at the first sight of its enemy descend, yet the bird, with its long beak and legs, instantly pins it to the bottom, and there seizes it securely. In general, the Heron is seen taking his gloomy stand by the side of a lake, as if meditating mischief, motionless, and gorged with plunder. His usual attitude on such occasions is that of sinking his long neck between his shoulders, and keeping his head turned on one side, as if viewing the water more intently. When the call of hunger returns,

the toll of an hour or two is sufficient to fill his capacious stomach; and, though he often feeds by night, he generally is able to retire long before to his lodging in some wood, which he quits early next morning. But in cold and stormy seasons, when his prey is no longer within his reach — the fish then abiding in the deep as their warmest situation, and frogs, lizards, and other reptiles, also seldom venturing from their retreats during the continuance of such weather — the Heron is obliged to practise abstinence, and to feed on such weeds as the margin of the lake affords: hence he feels the ills both of hunger and repletion, and notwithstanding the amazing quantity he devours, he is always lean and emaciated. While on this subject, it may, however, be well to attend to what Mr. Waterton has written: "I attribute the bad character (says he) which the Heron has with us, for destroying fish, more to erroneous ideas, than to any well-authenticated proofs that it commits extensive depredations on our store-ponds. Under this impression, which certainly hitherto has not been to my disadvantage, I encourage this poor persecuted wader to come and take shelter here; and I am glad to see it build its nest in the trees which overhang the water, though carp, and tench, and many other sorts of fish are there in abundance. Close attention to its habits has convinced me that I have not done wrongly. Let us bear in mind that the Heron can neither swim nor dive; wherefore the range of its depredations on the finny tribe must necessarily be very circumscribed. In the shallow water only can it surprise the fish; and, even there, when we see it standing motionless, and suppose it to be intent on striking some delicious perch or passing tench, it is just as likely that it has waded into the pond to have a better opportunity of transfixing a water-rat lurking at the mouth of its hole, or of gobbling down some unfortunate frog which had taken refuge on the rush-grown margin of the pool. The water-rat may appear a large morsel to be swallowed whole; but so great are the expansive powers of the Heron's throat, that it can gulp down one of these animals without much apparent difficulty. As the ordinary food of this bird consists of reptiles, quadrupeds, and fish, and as the Herons can only catch the fish when they come into shallow water, I think we may fairly consider this wader not very injurious to our property; especially when we reflect for a moment on the prodigious fecundity of fish."

In its aërial journies the Heron soars to a great height, and its harsh cry while on the wing frequently attracts the ear. In flying, it draws the head between the shoulders, and the legs, stretched out, seem, like the longer tails of some birds, to serve as a rudder. The motion of their wings is heavy and flagging, and yet they proceed at a very considerable rate. In England, Heron-hawking was formerly a favourite diversion among the nobility and gentry of the kingdom, at whose tables this bird was a favourite dish, not less esteemed than pheasants and peacocks. It was ranked among the royal game, and protected as such by laws; and a penalty of twenty shillings incurred by any person who took or destr its eggs. — Dr. Latham says, "In Engl and the milder climates, this species of H is stationary; migratory in the colder cording to the season; and is rarely see north: inhabits Africa and Asia in gen the Cape of Good Hope, Calcutta, and parts of India; and is found in Am from Carolina to New York."

The Adami Heron. (*Ardea Agami.*) general consent, as it were, this bird i lowed to be the most beautiful of the g It is a native of Surinam, and is n more than two feet and a half in len its beak is about six inches long, and d with the base of the under mandible the crown, the crest, and the hind pa the neck are bluish gray; the upper of the body, the wings, and the tail, fine glossy green; the quills are black sides of the neck bright rufous, with a gant white and rufous line, bounde black down the central part: the brea clothed with long, loose, dark feathers; on the back of the neck black, with a streak down the middle of each shaft under parts of the body are deep ru and the tail is brown.

The Great Heron. (*Ardea Herod* This species inhabits North America, a one of the largest of the genus, measu upwards of five feet in length: the bea eight inches long, and of a brown co inclining to yellow on the sides: ex back of the head is a long-feathered cr

GREAT HERON.—(ARDEA HERODIAS.)

the space between the beak and eye is na and of a pale yellow: all the upper pa the body, with the belly, tail, and legs, brown; the quills black; the neck, be and thighs rufous. Like the rest of

st Heron frequents the bor-
d rivers, and feeds on reptiles
s.

White Heron. (*Herodias al-*
s plumage is wholly white; it
so easily known from the com-
is also rather smaller, the tail
nger, and it has no crest. Its
manner of living are the same,
in the same countries, though
far less numerous, and it is
Great Britain. It is found
f the Caspian and Black Seas,
reat Tartary, and sometimes
ther north: it is also met with
s of Africa and America.

Great Heron (*Herodias gar-*
f the most elegant as well as
dest of the Heron tribe. The
the naked space round the
the legs dusky, and the feet
are is of the purest white, and
ith soft, silky, flowing plumes
breast, and shoulders, which
beauty quite peculiar to itself.
y-formed feathers are six or
length, with slender shafts,
at down towards their tips:
merly used to decorate the
riers, but they now embellish
Turks and Persians, or are
more consistent purpose of
he head-dresses of European
Little Egret is only about
e in length, and seldom ex-
and a half in weight. These
o have once been plentiful in
but they are now nearly ex-
ey are, however, abundant in
rope, and are found in almost
te and warm climate. Like
Heron, they perch and build
ve on the same kinds of food.

Heron. (*Nycticorax griseus.*)
which with its congeners is
tern naturalists in a separate
rax), is by no means numer-
idely dispersed over Europe,
rica. It is about twenty inches
bill is slightly arched, strong,
lining to yellow at the base:
round the eyes the skin is
reenish colour: over each eye
a black patch, glossed with
he crown of the head and the
neck, from which three long
feathers, tipped with brown,
waving. The hinder part of
ts of the wings, the sides, and
ray; throat white; fore part
breast, and belly, yellowish
the back black; legs greenish
dimmage of the female is con-
bright and distinct; and she
s delicate plumes which flow
of the male. She lays three
eggs. The Night Heron fre-
-shores, rivers, and inland
lives upon insects, slugs, rep-
It remains concealed during
es not roam abroad until the approach of night, when its harsh and disagreeable cry is painfully distinguishable. It builds its nest on trees and on rocky cliffs.

There are numerous other species and varieties of the Heron, differing in their size and plumage, but nearly all having the same habits, and being characterized by similar features with those we have described. Among the most important are the Purple-crested Heron (*Ardea purpurea*), common in the western parts of Asia and the north of Europe; the Violet Heron (*Ardea leucocephala*) of the East Indies; the Cocoi Heron (*Ardea cocoi*), a large species, native of Brazil; the Little White Heron (*Ardea Equinoctialis*), a native of Carolina and some other parts of North America; besides the Blue, the Brown, the Black, the Ash-coloured Heron, &c.

In Mr. Edwards's narrative of a "Voyage up the Amazon," one cannot but be struck with the multitudes of large birds which almost everywhere met the eye of the voyager; not the least numerous or important among them being various species of Herons. "Upon the trees," says he, "were perched birds of every variety, which flew before our advance at short distances in constantly increasing numbers, or, curving, passed directly over us; in either case affording marks too tempting to be neglected. Upon some topmost limb the great blue Heron, elsewhere shyest of the shy, sat curiously gazing at our approach. Near him, but lower down, herons white as driven snow — some tall and majestic as river naïads, others small and the pictures of grace — were quietly dozing after their morning's meal. Multitudes of night herons, or tacarés, with a loud quack, flew startled by; and now and then, but rarely, a boat-bill with his long-plumed crest would scud before us. The snake-bird peered out his long neck to discover the cause of the general commotion; the cormorant dove, from the dry stick where he had slept away the last hour, into the water below, swimming with head scarcely visible above the surface, and a ready eye to a treacherous shot. Ducks rose hurriedly, and whistled away; curassows flew timidly to the deeper wood; and fearless hawks, of many varieties, looked boldly on the danger."

HERRING. (*Clupea Harengus.*) This Malacopterygious fish, which frequents our coasts in such numbers, and furnishes a large class of persons with an important article of food, is from ten to twelve inches in length. It is principally distinguished by the brilliant silvery colour of its body, the advance-

Herring.—(Clupea Harengus.)

ment of the lower jaw beyond the upper, and by the number of rays in the anal fin, which are generally found to amount to sixteen; the back and sides are green, varied with

natural history has not only been called in question of late, but the migration of the Herring *from one latitude to another* has been denied by men of high scientific attainments who have given the subject great attention, and who assert that the Herring, having passed the winter and spring months in the deep recesses of the ocean, follows the dictates of nature, and at the proper season approaches the shallower water near the coasts to deposit its spawn. We shall therefore lay the statements, *pro* and *con*, before our readers

Mr. Pennant, in his British Zoology, says, "The great winter rendezvous of the Herring is within the arctic circle: there they continue many months, in order to recruit themselves after the fatigue of spawning, the seas within that space swarming with small crustacea in a far greater degree than in our warmer latitudes." He then thus proceeds: "This mighty army begins to put itself in motion in the spring: we distinguish this vast body by that name, for the word Herring is derived from the German, *Heer*, an army, to express their numbers. They begin to appear off the Shetland isles in April and May: these are only forerunners of the grand shoal which comes in June, and their appearance is marked by certain signs, by the numbers of birds, such as gannets and others, which follow to prey on them: but when the main body approaches, its breadth and depth is such as to alter the very appearance of the ocean. It is divided into distinct columns of five or six miles in length and three or four in breadth, and they drive the water before them with a kind of rippling: sometimes they sink for the space of ten or fifteen minutes; then rise again to the surface, and in bright weather reflect a variety of splendid colours, like a field of the most precious gems, in which, or rather in a much more valuable

remarked, the generally received op
but it is now supposed that the Herri
the Mackerel, is in reality at no ver
distance during the winter months fr
shores which it most frequents at th
mencement of the spawning season
this is thought a sufficient explana
the glittering myriads which at pe
seasons illumine the surface of the se
miles together. As a proof of this, Dr
observes that Herrings are in reality
at almost all seasons of the year abo
of the European coasts, and that the
ern voyages, supposed by Pennan
others, are impracticable in the short
assigned by naturalists: the fish,
swiftest progress, being utterly incap
moving at so rapid a rate as this mi
necessarily supposes.

But the subject has been more amp
cussed by Mr. Yarrell, who brings forw
many valid and well-supported obj
to the theory of the Herring's migrati
the arctic seas, that we shall take the
of extracting them from his excellen
"To show that this supposed migra
and from high northern latitudes d
exist, it is only necessary to state, th
Herring has never been noticed, tha
aware, as abounding in the Arctic
it has not been observed in any num
the proper icy seas; nor have our
fishers or arctic voyagers taken any
cular notice of them. There is no
for them of any consequence eit
Greenland or Iceland. On the w
coast of Greenland the Herring is
fish; and only a small variety of it,
ing to Crantz, is found on the n
shore. This small variety or spec
found by Sir John Franklin, on the s
the Polar basin, on his second jo
'That the Herring is, to a certain de
migratory fish,' says Dr. M'Culloch,

ry from being migratory to us th only, that Herrings visit the the county of Cork in August, ler than those which come down annel arrive, and long before eir appearance at other places north. 'In former times, the e east coast did not commence he west had terminated. It is lso that the eastern fishery has bsendant as quite to have ob- restern.' And Dr. M'Culloch, xamples, confirms a statement ade, that the fishery has com- est on the southern part of the what is also remarkable, that s past it has become later every Herring is in truth a most capri- dom remaining in one place; scarcely a fishing station round lands that has not experienced of this fish the greatest varia- to time and quantity, without ble reason."

re full of roe in the end of June, in perfection till the beginning hen they deposit their spawn. Herrings begin to approach the ly and August, and are then inch to two inches long. The unknown to the ancients, being r, found within the Mediterra- Dutch are said to have engaged y in 1164. The invention of lting Herrings is acribed to one Benkelson, of Biervliet, near died in 1397. The emperor isited his grave, and ordered a tomb to be erected to his me- this early period the Dutch ly maintained their ascendancy ng fishery; but, owing to the , and the relaxed observance of an Catholic countries, the de- rrings upon the Continent is than in the fourteenth and uries. The mode of fishing for by drift-nets, very similar to ed in the pilchard fisheries: carried on only in the night; curable time being when it is nd the surface of the water is reeze.

ere are some other species of e of them are of the same com- rtance as the Common Herring, ibed, which so abundantly visits a slight notice of one of them, ll that will be necessary.

HERRING. (*Clupea Leachii.*) g," says Mr. Yarrell, "which I is found heavy with roe at the ary, which it does not deposit lle of February. Its length is n seven inches and a half, and r two inches. It is known that ad often stated that our coast second species of Herring; but ware that any notice of it has d in print. In order, however, the name of that distinguished ith a fish of which he was probably the first observer, I proposed for it the name of *Clupea Leachii.*" The flesh of this species is said to differ from that of the Common Herring in flavour, and to be much more mild.

HESPERIIDÆ. A family of Lepidopterous insects, corresponding with the *Plebeii Urbicoli* of Linnæus, and in many respects approaching to the Moths. The six feet are of uniform size in both sexes, the hind tibiæ having a pair of spurs at the apex, and another pair near the middle of the limb; the antennæ are wide apart at the base, and are often terminated in a very strong hook; the maxillæ are very long; and the lower wings are generally horizontal during repose. All the known caterpillars belonging to this family are cylindrical without spines, with the anterior segments narrowed, and the head very large: they roll up leaves, in which they construct a slight silken cocoon, wherein the chrysalis form is assumed; this is entire, without angular prominences, and attached by the tail as well as girt round the middle.

These Butterflies have a peculiar, short, jerking kind of flight, which has obtained for them the name of *Skippers*. The species

HESPERIA [PAMPHILA] SYLVANUS, M.

are of comparatively small size, and of obscure colours, but some are ornamented with bright transparent spots, and others have

HESPERIA [PAMPHILA] SYLVANUS, F.

the hind wings furnished with long tails. They have a robust body; and frequently settle on flowers, leaves, and branches. There are a few British species, descriptions of which will be found in the works of Stephens and Humphreys. The "Genera of Diurnal Lepidoptera" of Doubleday and Hewitson will be found to contain much information on this family, which in foreign countries abounds in species and genera.

HESSIAN FLY. (*Cecidomyia destructor.*) This far-famed fly, as well as the "wheat-fly, which are common both to Europe and America, are small gnats or midges, and belong to the family called *Cecidomyiadæ*, or gall-gnats. The insects of this family are very numerous, and most of them, in the maggot state, live in galls or unnatural en-

largements of the stems, leaves, and buds of plants, caused by the punctures of the winged insects in laying their eggs. The Hessian fly, wheat-fly, and some others differ from the majority in not producing such alterations in plants. The proboscis of these insects is very short, and does not contain the piercing bristles found in the long proboscis of the biting gnats and mosquitoes. Their antennæ are long, composed of many little bead-like joints, which are larger in the males than in the females; and each joint is surrounded with short hairs. Their eyes are kidney-shaped. Their legs are rather long and very slender. Their wings have only two, three, or four veins in them, and are fringed with little hairs around the edges; when not in use, they are generally carried flat on the back. The hind body of the female often ends with a retractile, conical tube, wherewith they deposit their eggs. Their young are little footless maggots, tapering at each end, and generally of a deep yellow or orange colour. They live on the juices of plants, and undergo their transformations either in these plants or in the ground.

The Hessian fly obtained its common name from a supposition that it was imported into England from Germany, and taken to North America in some straw, by the Hessian troops under the command of Sir W. Howe, in the war of the Revolution. This supposition, however, has been thought to be erroneous, because the early inquiries made to discover the Hessian fly in Germany were unsuccessful. Dr. Thaddeus Harris brings together, with much industry, a large amount of information from various sources relative to its economy, its habits, and transformations; and from his statement we shall endeavour to lay the principal facts before our readers. The head and thorax of this fly are black. The hind body is tawny, and covered with fine grayish hairs. The wings are blackish, but are more or less tinged with yellow at the base, where also they are very narrow; they are fringed with short hairs, and are rounded at the end. The body measures about one-tenth of an inch in length, and the wings expand one quarter of an inch or more. Two broods or generations are brought to maturity in the course of a year, and the flies appear in the spring and autumn. It has frequently been asserted that the flies lay their eggs on the grains in the ear; but whether this be true or not, it is certain that they do lay their eggs on the young plants, and long before the grain is ripe. The egg is about the fiftieth of an inch long, and four thousandths of an inch in diameter, cylindrical, translucent, and of a pale red colour. The maggots, when they first come out of the shells, are of a pale red colour. Forthwith they crawl down the leaf, and work their way between it and the main stalk, passing downwards till they come to a joint, just above which they remain, a little below the surface of the ground, with the head towards the root of the plant. Having thus fixed themselves upon the stalk, they become stationary, and never move from *the place* till their transformations are completed. They do not eat the stalk, neither do they penetrate within it, as some persons have supposed, but they lie lengthwise upon its surface, covered by the lower part of the leaves, and are nourished wholly by the sap, which they appear to take by suction. They soon lose their reddish colour, turn pale, and will be found to be clouded with whitish spots; and through their transparent skins a greenish stripe may be seen in the middle of their bodies. As they increase in size, and grow plump and firm, they become imbedded in the side of the stem, by the pressure of their bodies upon the growing plant; but when two or three are fixed in this manner around the stem, they weaken and impoverish the plant, and cause it to fall down, or to wither and die. They usually come to their full size in five or six weeks, and then measure about three-twentieths of an inch in length. Their skin now gradually hardens, becomes brownish, and soon changes to a bright chestnut colour. This change usually happens about the first of December, when the insect may be said to enter on the pupa state, for after this time it takes no more nourishment. The brown and leathery skin, within which the maggot has changed to a pupa or chrysalis, is long, egg-shaped, smooth, and marked with eleven transverse lines, and measures one-eighth of an inch in length. In this form it has been commonly likened to a flax-seed. It appears, then, from the remarks of the most careful observers that the maggots of the Hessian fly do not cast off their skins in order to become pupæ, wherein they differ from the larvæ of most other gnats, and agree with those of common flies; neither do they spin cocoons, as some of the Cecidomyians are supposed to do. Inclosed within the dried skin of the larva, which thus becomes a kind of cocoon or shell for the pupa, it remains throughout the winter, safely lodged in its bed on the side of the stem, near the root of the plant; and protected from the cold by the dead leaves.

Very soon after the flies come forth in the spring, they are prepared to lay their eggs on the leaves of the wheat sown in the autumn before, and also on the spring-sown wheat, that begins, at this time, to appear above the surface of the ground. They continue to come forth and lay their eggs for the space of three weeks, after which they entirely disappear from the fields. The maggots, hatched from these eggs, pass along the stems of the wheat, nearly to the roots, become stationary, and turn to pupæ in June and July. In this state they are found at the time of harvest, and, when the grain is gathered, they remain in the stubble in the fields. To this there are, however, a few exceptions; for a few of the insects do not pass so far down the side of the stems as to be out of the way of the sickle when the grain is reaped, and consequently will be gathered and carried away with the straw; and from this circumstance it is possible that they might have been imported to straw from a foreign country. In the winged state, these flies, or more properly gnats, are very active, and, though very small and seemingly feeble, are able to fly to a considerable distance in search of fields of young grain.

of the pupæ may be destroyed
he wheat stubble immediately
and then ploughing and har-
and. This method will un-
ssuch good. As the Hessian
s eggs, to some extent, on rye
ose crops should be treated in
ner." It is found that luxu-
ere often escape injury than
thin and light. Steeping the
ling it in plaster or lime tends
rapid and vigorous growth, and
prove beneficial. Sowing the
od ashes, in the proportion of
o an acre, in the autumn, and
first and last weeks in April,
the mouth of May as the sower
r the wheat without injury to
found useful. Favourable re-
en made upon the practice of
p to feed off the crop late in
and it has also been recom-
n them into the fields again in
order to retard the growth of
after the fly has disappeared.
annot be said in favour of a
agement of the soil, feeding off
attle in the autumn, and burn-
ble after harvest; which will
sen the evils arising from the
of this noxious insect. Mr.
escribed and given the history
species.

ERA. A section of *Lepidop-*
g with the Linnæan genera
Phalænæ. It derives its name
erailled formation of the an-
are never terminated by a club,
he butterflies, but are generally
form, or fusiform, those of the
moreover often furnished with
dages, forming branches. The
re much varied, but the pupæ

Hepialus or Lithosia are from Attacus, in the tribe of Bombycidæ. Geometra, Tortrix, Noctua, &c., in their extended state, are groups admirably defined, and yet it is impossible to look at Euclidia, Acosmetia, Nola, or Platypteryx, without perceiving either that we must extend the limits of our families, so as to admit these anomalous groups, or create a far greater number of families than has hitherto been done." " " " " With regard to the primary groups of the *Heterocera*, I candidly admit that I am not able to offer a satisfactory classification, although it seems unquestionable that Sphinx (or the Hawk-moths), Bombyx (or the feather-horned full-bodies), Noctua (or the thread-horned full-bodies), Geometra (or the loopers) Pyralis, Tortrix, and Tinea, are, as Linnæus considered them, amongst the primary types."

HETEROCERIDÆ. A family of Coleopterous insects, of small size and subaquatic habits: body depressed; legs broad, compressed, and serrated; the thorax much narrower than the elytra; the jaws robust; and the antennæ short. These insects burrow in the mud of the banks of ponds or stagnant water, out of which they make their escape when the earth is shaken or stamped upon, and again as quickly bury themselves in the mud. Their bodies are clothed with a fine silky pubescence, whereby the action of the water upon them is prevented. They walk but slowly; yet they are sometimes observed in the hot sunshine to raise their wings, fly off, and again alight, with all the agility of the tiger-beetles. There is every reason to suppose them to be carnivorous.

HETEROMERA. A section of the Coleoptera, comprehending those beetles which have five joints in the tarsus of the first and

situated at the hinder part of the back; the body is gelatinous and transparent; and the mouth is furnished with a kind of muscular tube or proboscis, and a rough tongue. In their general form and structure they correspond very closely with those of the *Carinaria*, which has a thin shell, in form not unlike that of the Argonaut. They all inhabit either the tropical seas, or those of moderately warm climates. The best known genera are *Carinaria*, *Atlanta*, and *Firola*. Figures of the shells and animals of all these will be found in the admirably useful work of Mrs. Gray, "Figures of Molluscs."

HETEROPTERA. The name given to a section of the order of insects called HEMIPTERA, distinguished by the anterior wings being tough at their bases and membranous only towards their points. By far the greater number of them feed upon the juices of plants; some, however, prey upon smaller insects, and others suck the juices of larger animals. They chiefly inhabit tropical regions, and are mostly ornamented with beautiful colours and markings, which

RED-LEGGED PLANT BUG. (PENTATOMA RUFIPES.)

often vie with the most splendid of the Beetle tribe: those, however, whose habits are aquatic, are of a black or obscure colour. Most of the terrestrial species emit a powerful odour when suddenly alarmed or touched; this is occasionally of an agreeable nature, but more commonly (as in the case of the Bug — *Cimex lectularius*) disgustingly offensive. As an example we give a cut of the *Pentatoma rufipes*, a common species in this country. [See HOMOPTERA.]

HIMANTOPUS, or LONG-LEGGED PLOVER. A genus of Grallatorial birds, distinguished by the great length of their legs; from which circumstance they are sometimes called *Stilt-Birds*.

One species is occasionally found in this country; the LONG-LEGGED PLOVER, (*Himantopus candidus*, or *Charadrius Himantopus* of Linnæus.) White has recorded its appearance in the neighbourhood of his favourite Selbourne; and we believe our readers will be better pleased with the account so graphically pourtrayed by him in a letter to Pennant, than by any other description we perchance might offer. "In the last week of last month (April, 1799), five of these most rare birds, too uncommon to have obtained an English name, but known to naturalists by the terms *Himantopus*, *Loripes*, and *Charadrius Himantopus*, were shot upon the verge of Frinsham pond, a large lake *belonging* to the Bishop of Winchester, and *lying* between Wolmer forest and the town of Farnham, in the county of Surrey. T pond-keeper says there were three brace the flock; but that after he had satisfied curiosity, he suffered the sixth to remain molested. One of these specimens I cured, and found the length of the legs so extraordinary, that, at first sight, might have supposed the shanks had fastened on to impose on the credulity of beholder: they were legs in *caricatura*: had we seen such proportions on a Chi or Japan screen, we should have made allowance for the fancy of the draughtsm These birds are of the *Plover* family, might with propriety be called *Stilt Plo* Brisson, under that idea, gives them the propriate name of *l'échasse*. My specim when drawn and stuffed with pep weighed only four ounces and a quar though the naked part of the thigh m sured three inches and a half. Hence may safely assert that these birds exhi weight for inches, incomparably the grea length of legs of any known bird. The *mingo*, for instance, is one of the most l legged birds, and yet it bears no manner proportion to the *Himantopus*; for a *flamingo* weighs at an average about pounds avoirdupois: and his legs and th measure usually about twenty inches. four pounds are fifteen times and a frac more than four ounces and one quarter; if four ounces and a quarter have eight inc of legs, four pounds must have one hund and twenty inches and a fraction of viz. somewhat more than ten feet, such monstrous proportion as the world ne saw! If you should try the experiment still larger birds, the disparity would increase. It must be matter of great cur sity to see the Stilt Plover move; to obse how it can wield such a length of lever w such feeble muscles as the thighs seem to furnished with. At best one should exp it to be but a bad walker; but what adds the wonder is, that it has no back toe. S without that steady prop to support its cen it must be liable in speculation to perpet vacillations, and seldom able to preserve true centre of gravity. The old name *Himantopus* is taken from Pliny; and, by awkward metaphor, implies that the l are as slender and pliant as if cut out of thong of leather. Neither Willoughby n Ray, in all their curious researches, eith at home or abroad, ever saw this bird. M Pennant never met with it in all Gre Britain, but observed it often in the rarit of the curious at Paris. Hasselquist as that it migrates to Egypt in the autum and a most accurate observer of nature h assured me that he has found it on the ban of the streams in Andalusia. Our writ record it to have been found twice in Gre Britain. From all these relations it plain appears that the Long-legged Plovers a birds of South Europe, and rarely visit o island; and when they do, are wanderer and stragglers, and impelled to make distant a northern excursion from mist and accidents for which we are not able account. One thing may fairly be deduce that these birds come over to us from t

nobody can suppose that a
ed once in an age, and of
ble make, can constantly
in this kingdom.
rves, in his 'Birds of Eu-
g-legged Plover, as its con-
lead us to conclude, is a
congenial habitat is mo-
flat shores of lakes, rivers,
in the eastern portions of
is said to arrive from Asia
takes up its abode along
mong the vast morasses of
ussia, where, according to
it rears its progeny, and
ly wades in search of its
ch chance of being carried
but should such an occur-
the waves drift it out from
ases, like many of the true
e power of swimming with
and lightness: in fact, in
of view we consider the
ves, we find it adapted in
manner for its habits and
few birds exceed it in the
its wings far exceed the
through the air with asto-
When on firm ground, it
ering on long and awkward
ground is not its congenial

cies (*H. nigricollis*) is de-
e, in his American Ornitho-
ame name as the European.
In 'Gould's Birds of Aus-
ecies are figured and de-
n Australia, the *H. leucocephalus*, *H. pectoralis*, and one
ed, the *H. Novæ Zealandiæ*,
e and group of Long-legged
ely distributed.

female of the Red Deer or
s.]

A genus of Reptiles closely
lated *Sciurus*, most of the
appear to be natives of Au-
ecies are natives of the East.
ll the species will be found
talogue of the Reptiles in
um.

PPIDÆ. A genus and fa-
ous Decapod Crustacea, the
seem to be fond of working
e species, the *H. talpoida*, is
in North America. To this
Remus, *Remipes*, and *Cosmo-*
Hippa form very striking
otic genera.

A, or SATYRUS. A genus
lopters, the species of which
part brown or obscure. In
s and in mountainous dis-
they are numerous; some
Lapland (*Chionobas*), and
d ground within the tropics.
are several species, some of
ished beneath; the other
e recorded in the works of
, and Humphreys; *while a*
ala country, found lately in Perthshire, is figured and described in "The Zoologist." We must again refer for information to Doubleday and Hewitson's Genera of Diurnal Lepidoptera. The British species we restrict our attention to, are—

The HIPPARCHIA GALATHEA, or MARBLED WHITE BUTTERFLY. This pretty Butterfly is of a yellowish white colour chequered with black, which produces a pleasing effect. In

MARBLED WHITE BUTTERFLY. (HIPPARCHIA GALATHEA.)

some species the black prevails; in others the yellowish-white: the female is larger than the male. It is found abundantly near London, and in most parts of England, chiefly frequenting moist meadows, where it appears in June and July. The caterpillar feeds on grass,

UNDER SIDE OF MARBLED WHITE BUTTERFLY.—(HIPPARCHIA GALATHEA.)

particularly the *Phleum pratense*; is yellowish-green, and strikingly resembles that of some of the moths, and, like most if not all the species of the genus, feeds at night. Our figures, derived from the admirable work of

CATERPILLAR AND CHRYSALIS OF MARBLED WHITE BUTTERFLY.—(H. GALATHEA.)

Hübner, show the upper and under sides of *the perfect insect*, with the caterpillar and *the chrysalis.*

The Hipparchia Semele, or Grayling Butterfly. This large, curiously marked species is by no means uncommon on heaths and hilly places, where the caterpillar feeds most probably on grass, forming a cocoon in the earth, according to a French writer. This latter circumstance is very curious if true, and unique amongst British Butterflies; indeed there is only one Butterfly we have heard of, belonging to the genus *Zegris*, which makes a cocoon, although further researches may prove it to be not peculiar to

GRAYLING BUTTERFLY, UPPER AND UNDER SIDE.—(HIPPARCHIA SEMELE.)

one or two Butterflies. This species, as well as others of the genus, help to enliven the dullest heaths; and the pedestrian, even though no entomologist, cannot fail to be struck with these brown butterflies and their more gay but smaller comrades, the *Blues* or *Polyommati*. Our figure represents the upper and under sides of this species, and will show, better than any description, its markings and peculiarities.

The Hipparchia Pamphilus, or Golden Eye. This species of Butterfly, which makes its appearance in June, and again in September, on every grassy heath and common in the kingdom, has wings of a pale tawny above; the anterior with the margins dusky, and an ocellus near the tip; the posterior nearly resembling them, with an obsolete ocellus near the anal angle: beneath, the anterior wings are cinereous at the base and tip, with a rather large ocellus at the tip, white pupil, and whitish edge: the posterior wings are greenish-brown at the base, with an irregular pale band in the middle, in which are several minute indistinct ocelli; the margin greenish-brown. The body is deep fulvous; the antennæ tawny, with whitish annulations. The colour of the female is scarcely so deep as that of the male, nor are the wings so d edged with dusky above. The C has a green hue, and is marked w dorsal lines: it appears to prefer t tall grass to other food. Chrysalis

The Hipparchia Hyperanth Ringlet Butterfly. Of this Butterfly there are many variet some of them are scarce; for the m however, it is abundant in dam woods and lanes, particularly in t of Britain. The anterior wings plain brown, frequently with one black faintly ocellated spots; wi ocelli beneath towards the hinder the posterior wings are also brow with two or more obsolete ocelli; with two approximating ocelli be middle of the anterior margin, a parallel with the hinder margin wings are paler beneath, and edge whitish fringe. The body is fusc beneath: the antennæ brown sh annulated. Caterpillar gray or du a black line behind; it subsists chief meadow grass, and resides at its r chrysalis is bright brown, obscurely

The Hipparchia Janira, or Brown Butterfly. We knew among the tribe of papilionaceou that is more common than this not a meadow or lane in Britai scarcely to be seen in the month where it is wholly absent. The w of a dull dark brown or nearly bl male usually having on the surfa anterior pair near the tip a black with a white pupil; beneath fulv the hinder margin greyish-brown; wings beneath tawny-brown, with three dusky spots. Female genera a large irregular tawny orange b the anterior wings above, in which, male, is an ocellus. In some specim is a deep black patch on the disc o terior wings; while in others irreg undefined white blotches occur on parts of the wings. The Caterpill is green, with a white lateral l thickly covered with hair, feeds on grass: the Chrysalis is yellowish-gr dusky streaks on the head and wing

Knapp, speaking of it in his very ing Journal of a Naturalist, wher scribes the common occurrences of observed near a village in the west land, says, "Amid the tribes of in ticularly influenced by seasons, the few which appear little affected by events; the brown meadow but well known to every one, I ha missed in any year; and in those d cheerless summers when even th cabbage butterfly is scarcely to b this creature may be seen in every gleam, drying its wings, and trim flower to flower with animation nearly the sole possessor of the fiel sweets. Dry and exhausting as the may be, yet this dusky butterfly is n by it, and we see it in profusion about the unpleasantness."

...HIPPARCHIA ÆGERIA, or SPECKLED ...BUTTERFLY. This species seems to ...ritte generally diffused throughout the ...tish Kingdom; and several broods make ...r appearance between the beginning of ...l and the end of August. Anterior ...s brown on both surfaces, with a num... of yellowish spots, and an ocellus to... the tip; posterior wings above brown, ...a series of yellowish spots, of which the ...e inner ones are ocellated, having a white

...SPECKLED WOOD BUTTERFLY. UPPER AND ...UNDER SIDE.—(HIPPARCHIA ÆGERIA.)

...d with a black iris, and surrounded by a ...wish circle; beneath they are brownish, ...h irregular angulated brown bands; the ...der margin purplish, with a series of white ...; the cilia are yellowish and brown: the ...y brown above, pale beneath; the antennæ ...wish. The female is generally more ...ked than the male, and the spots are ...er. Caterpillar green, with white lon... lines; it feeds on couch grass. ...rysalis green, and short.

...IPPOCAMPUS. A genus of Lopho...ranchiate fish of a highly singular appear..., which has obtained the English name ...e Sea-horse Pipe-fish. The best known ...ies is the *Syngnathus Hippocampus* of ...ius, or *Hippocampus Brevirostris* of ...er. Its general length is from six to

...HIPPOCAMPUS.—(H. BRACHYRHYNCHUS.)

...inches; body much compressed, short, ...deep; the whole length of the body and ...divided by longitudinal and transverse ...s, with tubercular points at the angles ...intersection; snout slender; neck con-

tracting suddenly beyond the head; and the tail long, quadrangular, and terminating in a naked or finless tip. When swimming about, the Hippocampus maintains a vertical position; but the tail is ready to grasp whatever it meets in the water, and when fixed, the animal darts at its prey with great dexterity. In its *dry* or contracted state the fancied resemblance from which this fish takes its name is far more apparent than when alive. It is a native of the Mediterranean and Atlantic seas.

HIPPOLYTE. A genus of long-tailed Crustacea allied to the Shrimps, several species of which are found on our coasts. The British Museum contains these: descriptions and figures of them all are given in the works of Dr. Leach and of Prof. Bell on the British Crustacea.

HIPPONYX. A genus of Molluscous animals, of which there are numerous species, though until lately only known in a fossil state. The shell is obliquely cap-shaped; inequivalve, sub-equilateral, and destitute of ligament and hinge teeth; lower valve attached, sub-orbicular, with a muscular impression, composed of two lunulate portions, meeting at one extremity, and presenting the form of a horse-shoe; upper valve conical, with the apex inclined backwards, and the muscular impression marginal. These animals are generally supported on a solid shelly plate, but not always, the same object being gained when a suitable place of attachment can be found by their adhering to other shells.

HIPPOPOTAMUS, or RIVER-HORSE. This gigantic inhabitant of the African rivers is as formidable as the Rhinoceros, and in bulk inferior only to the Elephant, but its limbs are so short that its belly almost touches the ground. Its form is in the highest degree uncouth; the body being

HIPPOPOTAMUS.—(H. AMPHIBIUS.)

extremely bulky, fat, and round; the legs very short and clumsy; the head immensely large; the mouth prodigiously wide, and the teeth of vast strength and size, the incisors and canines of the lower jaw being long, and curved forwards: these canines, or tusks, sometimes measure more than two feet in length, and weigh upwards of six pounds each. Those in the upper jaw are much smaller; and the front teeth are of a moderate size. The lips are very thick and broad, and are beset, here and there, with scattered tufts of short bristles: the nostrils

are rather small, and open on the top of the muzzle; the eyes, which are very small, are situated high in the head: the ears are small, slightly pointed, and lined with short soft hair. The tail is short, thick, and sparingly covered with hair. The feet are

SKELETON OF THE HIPPOPOTAMUS.

large, and have four toes, terminated in separate hoofs. When just emerged from the water, the Hippopotamus appears of a palish brown, or mouse-colour, with a bluish cast on the upper parts; and the belly is flesh-coloured, the skin appearing through the hair: but when perfectly dry, the animal's general colour is an obscure brown.

In the interior of Africa, where the rivers run through countries overshadowed by large forests, the Hippopotamus walks about at the bottom of the stream, raising its head at intervals above the surface, for the purpose of respiration. By night it quits its watery residence in search of its food, which consists of the herbage that grows near the banks of the rivers, and the surrounding pastures. It is not confined to rivers, however; for it also tenants the inland lakes, and is sometimes seen even in the sea, though it will not drink salt water, prey on fish, or live on any kind of animal food. Its voice is described as a peculiar kind of interrupted roar, between that of a bull and the braying of an elephant. When on land it moves in a somewhat slow and awkward manner, but if pursued, can run with considerable speed, and directly plunging into the water sinks to the bottom, and pursues its progress beneath. It is extremely cautious of making its appearance by day, in places much frequented by mankind; but is fearless in rivers which run through unfrequented regions; where it is occasionally seen to rush out of the water with sudden impetuosity, trampling down every thing in its way. At such times it is of course highly dangerous; and it sometimes also shows great fury when only slightly provoked; but it is naturally of a harmless disposition; not attacking other animals, but merely committing havoc in plantations of maize, rice, sugar-canes, &c., and destroying trees, by loosening the roots with its vast and powerful teeth.

The Hippopotamus sleeps in the small ready inlets which are here and there found in the rivers it frequents. In such spots it also brings forth its young; having only one at a birth, which it nurses with great care. These animals are occasionally shot, or harpooned; but they are said to be most successfully taken by pitfalls, prepared for them near the rivers. But it is chiefly on account of the tusks and teeth that this animal is killed; their hardness being superior to that of ivory, while they are at the same time less liable to turn yellow. The skin, from its great thickness and strength, when dried, is formed into shields, and is said to be bullet-proof; the living animal, indeed, if shot at anywhere but on the head or belly, is scarcely vulnerable; nor is this wonderful when we consider that the hide is two inches deep or more on the back and sides. The flesh of this animal is eaten by the inhabitants of South Africa, and, as would appear from the reports of travellers, with more than usual *gusto* when it is in a half putrid state. The Hippopotamus has properly been considered as the Behemoth of Scripture, where it is poetically described as drinking up a river, and having bones as strong as brass. The fullest account of the Hippopotamus and its habits is given by Dr. Andrew Smith, in his lately published Zoology of South Africa; while the visitors to the Zoological Gardens in the Regent's Park have, since 1850, become familiar with the bulky form, obesity, and curious manners, of the large Hippopotamus.

HIPPOPUS. A genus of Conchifera, of which there is but one known recent species, the *Hippopus maculatus* (or Bear's-paw Clam) from the Indian Ocean. The delicate whiteness of the interior, the undulating edge, the radiated fluted columns, and the richness of the variegated colouring are such as to entitle it to the admiration of every one. It is equivalve, regular, and inequilateral; valves closed; transverse; ligament external; shell imbricated with numerous tubercles. It is not nearly so large as the *Tridacna*, but the animal is similar to it. [See TRIDACNA.]

HIRUDO. [See LEECH.]

HIRUNDO: HIRUNDINIDÆ. A genus and family of Fissirostral or wide-gaping birds of the Cuvierian system, embracing the Swallow tribe. Our British species are occasional visitors, and the heralds of summer: but at the approach of winter they resort chiefly, as is supposed, to Africa. [See SWALLOW.]

HISPIDÆ. A family of Coleopterous insects popularly known in the United States as "little leaf-beetles." The upper side of these beetles is generally rough, as the generical name implies. The larvæ burrow under the skin of the leaves of plants, and eat the pulpy substance within, so that the skin, over and under the place of its operations, turns brown and dries, and has somewhat of a blistered appearance, and within these blistered spots the larvæ or grubs, the pupæ, or the beetles may often be found. The eggs of these insects are little rough blackish grains, and are glued to the upper side of the leaves, sometimes singly, and sometimes in clusters of four or five together. The grubs are about one-fifth of an inch in length, when fully grown. The body is oblong, flattened, rather broader before than behind, soft, and of a whitish colour, except

nd and the top of the first ring, which
ws, and of a horny consistence. The
state lasts only about a week, soon
which the beetles come out of their
ra.

leaves of the apple-tree in North Ame-
e inhabited, according to Dr. Harris,
ll of these little mining insects, which,
beetle state, are probably the *Hispa*
or rosy Hispa. They are of a deep
or reddish-yellow colour above,
d with little deep red lines and spots.
ead is small, the antennæ are short,
f a black colour; the thorax is nar-
ower and wide behind, rough above,
with deep red on each side; the
overs taken together form an oblong
; there are three smooth longitudinal
r ribs on each of them, spotted with
red, and the spaces between these lines
eply punctured in double rows; the
side of the body is black, and the legs
rt and reddish. They measure about
th of an inch in length. These beetles
e found on the leaves of the apple-tree
the latter part of May and the be-
g of June. A small species is found
country (*H. testacea*).

TER: HISTERIDÆ; or MIMIC
TLES. A genus and family of Coleop-
hich, from the power they possess of
acting their limbs and counterfeiting
evidently derive their name from the
word *Histrio*, a stage mimic. The
belonging to this group are distin-
d by the very hard consistence of the
which is generally of an oblong-quad-
m, and of a highly polished surface.
ntennæ are short, elbowed, and ter-
ed by a large and solid club; the
libiæ very robust, horny, and exserted;
axillæ elongated and bilobed; the la-
bipartite and octose; the palpi filiform;
ws more or less dentate, the two pos-
pairs being inserted widely apart;
e elytra generally short and truncate.
insects seldom exceed a third of an
h in length; their colours are generally
and shining; some few have the elytra
mented with blood-coloured or pale buff
, or exhibit metallic tints. They creep
, but fly well. They feed upon decay-
egetable and animal matter, and are

C BEETLE.—(HISTER QUADRINOTATUS.)

very abundantly in the spring in the
of horses and cows; some species,
flattened bodies are admirably adapted
ir mode of life, *reside beneath the* bark of trees; while some of the more minute species are constantly found as residents in ants' nests. The larvæ are linear, depressed, nearly smooth, of a soft consistence, and white colour; and feed upon the same substance as the perfect insect.

HOBBY. (*Falco subbuteo.*) A bird of the long-winged Hawk kind, formerly used in the humbler walks of falconry, chiefly for larks and other small birds, which were caught in a singular manner: when the Hawk was cast off, the larks, keeping close to the ground through fear, became an easy prey to the fowler, who drew a net over them. The Hobby is about twelve inches in length; has a prominent and crooked bill; the orbits of the eyes are yellow, and over each eye is a light-coloured streak. The crown of the head, the back, and the coverts of the wings, are bluish black; the hinder part of the neck is marked with two pale yellow spots; and each cheek with a large black spot pointing downwards. The breast and belly are pale, marked with dusky streaks; wings brown; the two middle tail feathers deep dove colour, the others barred with rusty, and tipped with white; the legs and feet are yellow. The female is considerably larger than the male; the spots on her breast are more conspicuous; and her legs are greenish. She builds in high trees; and lays three or four bluish white eggs, irregularly spotted with grey and olive: but the Hobby is a bird of passage; and though it breeds here, it migrates from this country in October.

HOG. (*Sus.*) As all the varieties of this useful quadruped are derived from the Wild Boar, we shall proceed to describe that animal before we speak of the domestic species; merely premising that the genus *Sus* is in some points of an ambiguous nature, appearing to form at once a link between the cloven-footed, the whole-hoofed, and the digitated quadrupeds.

The Wild Boar is a native of almost all the temperate parts both of Europe and Asia. In times of yore it was not an unfrequent inhabitant of our own woods and forests; where it served as a beast of chase, as it still does in India, as well as in some parts of Continental Europe; presenting not only the most interesting and exciting sport to the hunters, but at the same time one of the most dangerous in which they can be engaged. This fierce and powerful animal is armed with long, curved, and sharp tusks, capable of inflicting the most severe and fatal wounds; but as he advances in age (after he has passed his fifth year), he becomes less dangerous, on account of the growth of these formidable tusks, which turn up so considerably as often to impede rather than assist his intentions of wounding with them. We learn from Buffon, that wild Boars follow their common parent until they have passed their third year, never wandering alone till they have acquired sufficient strength to resist the attacks of the wolf. "These animals," says he, "when they have young, *form a kind of flocks*, and it is upon this *alone that* their safety depends. When at-

training, are sufficient. The oldest Boars, which are known by the track of their feet, should alone be hunted: a young Boar of three years old is difficult to be attacked; because he runs very far without stopping; but the old Boars do not run far, allow the dogs to come near, and often stop to repel them. During the day the Boar commonly keeps in his soil, which is in the most sequestered part of the woods, and comes out by night in quest of food; and in summer, when the grain is ripe, it is easy to surprise him among the cultivated fields, which he frequents every night."

The Wild Boar is in general more gaunt and bony, the muscular strength much greater, and the temper far more savage, than the domestic Hog. It is of a dark brindled gray colour, or blackish; but when only a year or two old, is of a dull yellowish brown cast; and when quite young, is marked by alternate dusky and pale longitudinal bands along the sides. Between the bristles, next the skin, is a finer or softer hair, of a woolly or curly nature. The snout is somewhat longer in proportion than that of the domestic species; but the principal difference is in the length of the tusks,

BERKSHIRE HOG.

most gross in his manners, and has t
been generally regarded as the very
fication of impurity. The Jews were
enjoined not to eat its flesh; and
hometans agree in this respect w
Mosaic prohibition. In most parts of
however, it constitutes a very mate
of the food of mankind. And we
well to reflect, while we decry th
habits of this animal, that from
sensations we are often apt to form
judgment, and overlook that wise
Providence which adapts every part
tion to its respective inhabitants.
is an animal of a remarkably prolific
and, as they bring forth from ten t
and sometimes twenty, at a litt
would soon become very numerou
they not diminished for the support
Their flesh, says Linnæus, is wholes
for persons of athletic constitutions,
who habituate themselves to much
but improper for such as lead s
lives. It is, however, an article of
consumption, and one which is of g
portance to a naval and commercial
as it takes salt better than any oth
and consequently is capable of being
preserved.

The Jews and Mahometans not
stain from the flesh of swine from a
principle, but even consider themse
filled by touching it. The Chinese,
contrary, are so excessively fond of p
many, owing to this partiality alone

the south-western divi-
considered famous for
; those of Hampshire,
Berks being foremost;
that have of late years
ders of stock generally
ntry, and the impetus
rtions by the various
ions, we may fairly pre-
st the same praiseworthy
vouring to excel in this
anch of rural economy.
e subject, perhaps, does
ithin our province; for
it where art begins, the
ught to end. We shall
the different qualities
ne breed from another,
Mr. Bell's remarks on a
of the Porcine genus—
The introduction of the
ffected an astonishing
breeds, wherever they
it. This very remark-
s particular mention,
es of great improvement
ch of stock, but also as
zoological question of
Frederic Cuvier believes
a wild stock specifically
d Boar; and could this
o far to settle the long
lt question of specific
ected with the produc-
my; for in that case, as
the Chinese and the
rfectly fertile, the argu-
stinction founded upon
once falls to the ground.
l, however, those who
duction of fertile young
identity in the parents,
that the supposition of
alist is erroneous upon
The Chinese Hog is of
thick; the belly deep,
reaching the ground;
e; the head very short,
Its influence on the
h which it has inter-
ntly to improve them
e flesh; but while the
ross is certainly excel-
en breeds are still es-
by far the best bacon

PIAN. (*Phacochœrus*
animal is distinguished
hog by a pair of large,
es under the eyes; the
broader, and is very
he ears are large, and
e tusks in the lower
but those in the upper
much curved: they
their place being sup-
gums: immediately be-
is loose and wrinkled,
corners of the mouth is
e. The body is strong,
lar; the tail is rather
d with scattered hairs;

the colour of the whole animal, a dusky brown. It is a native of the hotter parts of Africa, residing principally in subterraneous recesses, which it digs with its nose and hoofs. When attacked or pursued, it rushes on its adversary like the Boar, and shows great fierceness.

HOG-LOUSE. [See ONISCUS.]

HOLIBUT, or HALIBUT. (*Pleuronectes hippoglossus.*) This fish not only exceeds in size all the flounder genus, but ranks as one of the largest of fishes; sometimes attaining a length of six or seven feet, and a weight of 300 or 400 lbs. It is a native of the Northern and Mediterranean seas, and appears to arrive at its greatest size in the former. It is considered as the most voracious of its tribe; preying on a variety of other fishes and crustacea. The colour of the Holibut is deep brown above, and white beneath; the body being quite smooth, and the scales moderately small. Its flesh is coarse and dry, but it admits of being salted; and it constitutes no inconsiderable part of the food of the Greenlanders, who cut it into thin slips, and dry it in the sun. In the London markets this fish is usually cut into large pieces when exposed for sale.

HOLOTHURIA. A genus of marine Radiata, the distinguishing characters of which are, that the body is of an elongated form, defended by a coriaceous integument; open at both ends, and perforated by numerous small canals, through which suckers are protruded. At the anterior extremity is the mouth, furnished with many retractile tentacula, and at the opposite end is the aperture of the cloaca.

The *Holothuriæ* of the European seas are neither numerous nor brilliantly coloured; but in more tropical seas, where coral reefs rise within a moderate distance of the surface, as in the Red Sea, and the seas to the north and east of Australia, they are exceedingly numerous, and many of them splendidly coloured; so that, together with other Radiata of this and other orders, they make the sea-bottom, when seen by the light of an almost vertical sun, as gay as a tropical garden. The Holothuriæ resemble cucumbers; and various Actiniæ, when their tentacula are expanded, have as gay an appearance as the flowers of almost any plants. Many of this species are esculent, and of a very gelatinous nature. When properly prepared, the Chinese are exceedingly fond of them as a principal ingredient

EATABLE TREPANG.—(HOLOTHURIA EDULIS.)

in restorative soups. The Malays catch and dry them in great quantities for the Chinese markets, where they fetch a high price, and are called *Trepang*.

We learn from a paper by Mr. C. W. Peach, read before the Royal Polytechnic Institution of Cornwall, that a species of

make the appearance more complete. On being handled, they stain the hand light green. The head is furnished with twenty tentacula, which surround the mouth; the opening is tolerably large, and can be much expanded; and it is amusing to watch the motions of the tentacula acting as feelers. If the tentacula are viewed from the upper part they are club-shaped on the top, this club being placed on a footstalk an inch in length, which is retractile, and is invariably of a lighter colour than the top. When seen from the under side, they appear like the umbels of the elder, and are beautifully branched and tipped much in the manner of the elder flowers. They can completely close in their tentacula, which they do on being disturbed; and they use them at times as organs of locomotion. Outside the tentacula is a border of spines like processes on a skin, which reaches a short way up the tentacula, and serves as a covering when these are withdrawn. These spines very much resemble the thorns of the brier; the back and sides are covered with similar ones, but not in rows. The under side is furnished with feelers in very great numbers; these feelers they stretch out to a great length, and attach themselves firmly by them; so much so, that in trying to detach them the feelers have been frequently left behind. Each feeler has a small round calcareous plate at the tip, which, under the microscope, shows that it is composed of innumerable plates, an object of great beauty; these plates effervesce with acid, and so do the plates of the mouth and tips of the processes. When the softer parts of the feelers are cut transversely, they are composed of fine tubes, and when magnified have very much the appearance of some of the corals. The animal is covered with a dark slimy mucilaginous skin, which peels off freely; underneath this it is light gray, and has a reticulated appearance. They are of various sizes and lengths, often nearly a foot in length, and thick in proportion; they sometimes draw themselves almost into a ball, at others are much inflated in the

HOMOPTERA. An order of insec
furnished by their possessing two p
wings, usually composed of a firm mem
and not covered by scales; and by
the anterior pair of the same su
throughout, and roof-like when folde
mouth is adapted for suction, the
being channelled, and surrounded by
like organs, with which the tissues of
are pierced. All the insects of this
subsist on vegetable juices; and among
there are many which do an inc
amount of damage to the garden crops.
order may be divided into three se
in the first, *Trimera*, the tarsi hav
joints; in the second, *Dimera*, the
two; and in the third, *Monomera*, the
but one joint.

HONEY-GUIDE. (*Cuculus Indi*
Sparm.) The birds to which this n
given inhabit various parts of Afri
are closely allied to the Cuckoo tri
differ from them in hatching their ow
They are celebrated for their curious
of guiding the natives to the nests o
bees, enticing them to the spot by
before them, and reiterating a peculi
They have a solid, conical, and arched
small head; body long and straight
strong and short; and wings reaching
middle of the tail. The feathers are
hard, and pressed close to the body
the skin is so thick and tough as to
them effectually from the stings of be
less the enraged insects attack their
The nest of this Honey-guide is compo
slender filaments of bark woven toge
the form of a bottle, the neck and o
hanging downwards; and it is said
constructed in the hollow of trees, wh
bird climbs like a woodpecker. The g
colour is an olive-green, brownish
upper parts, and inclining to yellow be
One species is described as being about
inches in length; and another as ten i
they are called, respectively, the Litt
Great Honey-guide (*Indicator min*

d with them, many of these birds berries; and one species is said to es in the bark of trees, and to extract from them by means of its long

AUSTRALIAN GONEY EATER. (MELIPHAGA AUSTRALASIANA.)

HOOPOE.—(UPUPA EPOPS.)

very much after the manner of the ker. The truly national work of ld, "The Birds of Australia," con- ures and descriptions of many spe- ar figure is derived from his work. THOCHÆRA: MELIPHAGA.]

KTIP [MOTHS]. A name given ctors to Moths of the genera *Drepana* *ypteryx*.

POE. (*Upupa.*) A genus of birds a close relationship to certain forms hrvicke or Crow family. The bill is the same manner, and for the same s, as in the Hornbills; namely, for insects, &c., squeezing them to death, owing them with a jerk into the The tongue is short, and destitute ower of extension.

COMMON OF EUROPEAN HOOPOE (*Upu-*) is an elegant bird, inhabiting the and temperate parts of the old Con- and migrating occasionally to the islands. It is about the size of a but is easily distinguished from it ead being ornamented with a hand- ost, composed of cinnamon-coloured of unequal lengths, having a white black tips, which it can expand and at pleasure. Its bill is also much and more slender, and its feet much The colour of the head, neck, and pale ferruginous, darkest on the back ulders; the wings and tail are black, ner crossed by five white bars, the lat- ed in the middle by a white crescent. ope feeds on various grubs, worms, ence it follows the retreat of the Egypt, whose neighbouring plains with insect life; and it also frequents d lands and pasture grounds, like ws. It is more abundant on the con- of Europe than in Britain; but its in temperate climates is but short, its arrival from warmer regions being late in the year, and its departure early. This migration, however, is not universal, since it is observed that great numbers of these birds are constantly found about the towns and villages of Egypt, becoming very familiar with man, and building their nests in the immediate vicinity of his habitations. The flight of the Hoopoe is rather slow and undulating; and it seldom perches on trees. The name of the bird seems to be derived from its continually uttering, in soft and rapid tones, a peculiar sound, resembling *hoop, hoop, hoop.*

HOPLOPTERUS. A genus of birds allied to the Plovers; so named from the bony spine or projection on the shoulder of the wing. There are several species, of which the longest known is the SPUR-WINGED PLOVER of Africa (*H. Spinosus*).

HOPPING DICK. The local name given to a species of Thrush (*Merula leucogenys*), common in Jamaica, whose lively and familiar manners, as well as his sable plumage, and clear, rich, and mellow song, greatly resemble the English Blackbird. "The forests skirting the mountain are his favourite haunt. If he frequents the open slopes and crests of the hills, he glides from tree to tree, just above the surface of the grass. If he rises above the lower branches of the pimento, or into some of the loftier shrubs, it is to visit the *Tillandsias*, or parasitical wild pines, to drink from within the heart-leaves at those reservoirs of collected dews, which are the only resource of the birds in these high mountains. His dark sooty plumage, his brilliant orange bill, and his habit, when surprised or disturbed, of escaping by running or flying low, and sounding all the while his alarm scream till he gets away into the thicket, completely identify him with the European Blackbird."—*Gosse.*

HORIADÆ. This family of Coleopterous insects is of very small extent, but the species are comparatively large, handsomely coloured, and principally confined to tropical countries. The larva of one of the species (*Horia maculata*), an inhabitant of South America and the West Indies, is said

to destroy the larva of a species of wild carpenter bee (*Xylocopa teredo*), which makes its cells and deposits its eggs in the trunks of

CISSITES TESTACEA.

trees. Our figure represents the *Cissites testacea*, from the East Indies. It is distinguished from *Horia* by the head being narrower than the thorax, and the posterior femora much thickened.

HORNBILL. (*Buceros.*) This family of Conirostral birds is remarkable for the very large size of the beak, and for an extraordinary protuberance with which this is surmounted. They are both carnivorous and frugivorous, feeding not only on various berries, fruits, and other vegetable matter, but also on the smaller kinds of animals, as mice and small birds, as well as on insects and any putrid animal substance. Their large bills are of much less real than apparent strength, and they vary considerably in appearance during the different periods of their age, the upper process or excrescence not exhibiting its genuine form till the full growth of the bird. When cut across, it is found to consist of a very loose bony substance; its interior being traversed in every direction by osseous fibres, the interspaces being quite hollow: all the bones, indeed, of this remarkable bird being more permeated by air than in any other species. They inhabit the warm parts of Asia and Africa; and in their general habits they seem to bear a considerable resemblance to the Crows. The larger species are very difficult of approach; and they perch on the branches of high trees, where their vision can command an extensive range. They may be said to hold the same rank in the old continent that the Toucans do in America; not only from the enormous size of the bill, but also from their habit of swallowing their food whole, throwing it up into the air, and catching it as it falls. There are many species; but two will suffice for our description.

The RHINOCEROS HORNBILL. (*Buceros Rhinoceros.*) This bird is about the size, though rather more slender, than a hen turkey: its colour black, except the lower part of the belly and tip of the tail, which are white: the bill is about ten inches in length, slightly curved, sharp-pointed, irregularly serrated on the edges, and furnished at the base of the upper mandible with an immense appendage in the form of a reverted horn: a longitudinal black line divi process, the part above it being of a red, the part below yellow, and the

RHINOCEROS HORNBILL. (BUCEROS RHINOCEROS.)

it black; the bill itself is black at t tinged with bright red, and the rem yellow: the legs are short, strong, a pale yellow colour.

The UNDULATED HORNBILL. (*undulatus.*) The beak of this species proportioned to the size of the bird, colours have more variety and elega in any other of the tribe. The leng bird is about thirty inches, exclusiv bill, which is only five. The plu black, with a strong gloss of blue large patch of red-brown between th ders: the chin, the orbits of the e the space between them and the upp dible, are covered by a bluish bare sk bill is a pale yellow, tinged with and is moderately curved and sharp-

HORNED OWL. [See OWL.]

HORNET. (*Vespa crabro.*) Thi is of the Wasp kind, but much m midable, and very considerably lar has four wings, the first pair being the largest, and with these it flies wi velocity. The head is oblong, and pa the eyes are prominent and semil and between them there are two fi antennæ. The body is united to th ders by a slender filament; the m the fore part is of a dark brown hue, with a deep yellow belt; and the part is wholly of that colour, except is variegated with eight brown spo Hornet, like the Wasp, is extremel cious, and preys on almost any kind animal substances which it can ob well as on honey, fruit, &c. Its greatly to be dreaded, and is often pr of very serious consequences. The h nest is generally built in the cavity decayed tree, or immediately beno roots; and not unfrequently in thatc and other similar situations. It smaller size than that of the Wasp, somewhat globular form, with the

watching the flight of others, I
ired the tree containing their
were carrying on their labours
of the moon, apparently quite
if it had been open day." [See

notice of the Hornet leads us to
the "Journal of a Naturalist"
ting remarks relative to this in-
ry-day events manifest to very
servation, that no created being,
aster of the ocean, 'that makes
like a pot of ointment,' to the
ebly creeps on the ground, exists
e persecutions or annoyance of
ome may be subject to fewer
n others, but none are wholly
e strong assail by power, and
ulted themselves by the minute or
year (1826) the Hornet abounded
unusual numbers, and afforded
idence of its power and voracity
ot have been exceeded by any
ect. In our gardens the impe-
r of four or five of them at a
be frequently heard about our
They would occasionally ex-
et liquor from the gage, or other
but the prime object of their
eize the wasps that frequented
ness. This they not only did
nature was feeding on the fruit,
hawk after them when on the
e them with a facility to which
flight seemed unequal; bear
neighbouring plant, and there
insect, which seemed perfectly
by the might of the Hornet.
ration was to snip off the head,
away the lower part by the
when near, we could hear them
by the outer coat from the body,
it with their strong mandibles;
ouring it, but generally only

most probable that they fall victims to each other's voracity in the cold damp season that usually terminates the autumn of our year."

HORNET [SPHINX]. A name given by collectors to Hawk-moths of the genus *Trochilium*.

HORSE. (*Equus caballus.*) This most useful and beautiful quadruped demands, perhaps, a more extended notice than the ordinary limits of this work may seem to afford; but we trust we have not omitted any material point, zoological or historical, that is essential to a complete description of an animal, whose services to mankind are everywhere deemed invaluable, and whose noble nature universally excites man's admiration. It has been well observed, that had not custom dignified the Lion with the title of "king of beasts," reason could nowhere confer that honour more deservedly than on the *Horse*. His courage, strength, fleetness, his symmetrical form, and grandeur of deportment, are unalloyed by any quality injurious to other creatures, or calculated to create the aversion of man; whose orders he implicitly obeys, whose severest tasks he undertakes with a cheerful alacrity, and whose pleasures he contributes to with animation and delight. Nor is this all: for, when called to bear our warriors to the battle-field, nothing can excel his resolute fierceness, his courageous ardour! In the poetical language of the Sacred Writings, "His neck is clothed with thunder. The glory of his nostrils is terrible. He paweth the valley, and rejoiceth in his strength. He goeth on to meet the armed men. He mocketh at danger, and is not affrighted; neither turneth he back from the sword." (Job, xxxix.)

What region the Horse originally inhabited, or to what nation we are indebted for his first subjugation, are questions far too

birth of Christ; which is a date anterior to any that profane history affords on the subject.

The generic characteristics of the Horse are a broad undivided hoof; six cutting-teeth or *nippers* in each jaw; two very small tusks or canines; grinders with a flat crown, presenting, when worn, different figures, formed by the enamelled plates of the interior; stomach small and simple, intestines very large. Wild Horses exist in many countries; but Arabia produces the most beautiful breed, and also the most generous, swift, courageous, and persevering. They occur, though not in great numbers, even in the deserts of that country, and the natives make use of every stratagem to take them. They select the most promising for breeding, and, instead of crossing the breed, the utmost care is taken to keep it entire. In other countries it is found necessary to change the races, otherwise, it is said, the Horses would soon degenerate; but in Arabia the same blood has passed down through a long succession, without any diminution either of beauty or strength. A general belief has hence arisen, and been long maintained, that to Arabia are we indebted for the primitive breed of this noble animal, and for its subjugation to man's use. This opinion, however, has been combated by Mr. Bell (in his History of British Quadrupeds) in the following terms: "The long acknowledged superiority of the Horses of Arabia is no proof that they were indigenous to that arid country in a wild state; for there is great reason to conclude that it was only at a comparatively late period that they were employed by that people. Whilst Solomon was receiving from Arabia treasures of various kinds, it was from Egypt only that his Horses were brought: and so highly were they valued by this magnificent and luxurious king, that notwithstanding the Divine prohibition, 'that the king shall not multiply Horses to himself, nor cause his people to return into Egypt, to the end that he should multiply Horses,' it is stated that he had no less than forty thousand stalls of Horses for his chariots, and twelve thousand horsemen. There appears great probability, therefore, in the opinion that Egypt or its neighbourhood is its original country; and still more, that this extraordinary people first rendered it subservient to man, and subsequently distributed it to other countries."

It does not appear, then, that a clue can be obtained to determine, with any degree of precision, in what country the Horse first roamed at large, or where he first submitted to the yoke of man. Those which at present exist in a wild state seem to have been derived from such as had been once domesticated. In the Pampas or plains of South America, on the banks of the river La Plata, there are immense troops of wild horses, which are descended from those of Andalusia, originally carried thither by the Spanish conquerors: and we learn from the accounts given by various travellers, that they not only associate together in herds or troops of several thousands, but that on the appearance of any danger, they evidently put themselves under the direction of a leader, in order the more effectually to resist the enemy's attack. Large herds are sometimes seen in the southern parts of Siberia, in the deserts of the Mongul territory, and among the Kalhas to the north-west of China. Moldavia also abounds with them. At the Cape of Good Hope there are numbers of wild Horses, but they are small and vicious. They are likewise found in other parts of Africa, but the savages there seem ignorant of their value, and also of the methods of taming them.

In Brande's Dictionary of Science, &c. it is remarked, that "wild Horses appear to be free from nearly all those diseases to which the domestic breed are prone. They are generally of a pale or grayish-brown colour, with brown mane and tail, a whitish muzzle changing to black about the mouth. They are less than the domestic breed; with a larger head; longer legs; larger ears, with the apices sub-reflected; the forehead is more convex above the eyes; the back are contracted and sub-cylindrical; mane suberect, less lax than in the domestic horse; the coat, in winter, looser and sub-undulated along the back; the tail not very large. They recognize the presence of man at a great distance when he approaches them to windward, and fly from him with wonderful speed; they prefer sunny slopes, and avoid forests and steep places. They do not wander beyond the fiftieth degree of north latitude. Wild stallions attracted by domestic mares are often taken and killed. The first change which domestication works upon the form of the wild Horse is to increase the bulk of his trunk as compared with his head and limbs. This change is beautifully exemplified in the Arabian, which we must regard as an early, if not first remove from his wild neighbours of the more northern deserts, and which the Bedouin still hunts for the sake of their flesh. The head is not only proportionally smaller, but is remarkable for the breadth and squareness of the forehead, the shortness and fineness of the muzzle, the prominence and brilliance of the eye, and the smallness of the ears. The body is still somewhat light, and narrow at the fore part; but the shoulder is superior in its formation to that in any other breed. The Arabian seldom stands more than fourteen hands two inches. The 'Barb,' so called from its native country, Barbary, is somewhat smaller than its nearly the Arabian; it seldom exceeds fourteen hands and an inch; the shoulders are flat, the chest round, the legs rather long, and the head small and very beautiful. The Barb is remarkable for its fine and graceful action; but though it is superior to the Arabian in its general form, it has not its mettling spirit or its speed. Our most valuable English varieties of the Horse date from the introduction of, and intermeddling with, the Barb and Arabian."

The Horse is naturally an herbivorous animal, and is more scrupulous in the choice of his food than most other domestic quadrupeds; in the meadow rejecting several

plants which the ox devours with pleasure. His thin and muscular lips, his firm and compressed mouth, and his sharp incisor teeth, are admirably adapted to seize and to crop the grass; and when, free from man's control, he can follow his own propensities, we all know that grass is his chosen food: yet, in order that he may subsist (as in his present state of domestication he necessarily must) on aliment of a much harder kind, he is enabled, by the peculiar structure of some of the bones of his face, so to move his jaws as to comminute and grind down his "corn."—Of the various modes of judging of a Horse's age, the best is from a careful inspection of the teeth. Five days after birth, the four teeth in front, called *nippers*, begin to shoot; these are cast off at the age of two years and a half, but are soon renewed; and in the following year two above and two below, namely one on each side of the nippers, are also thrown off; at four years and a half other four next those last placed fall out, and are succeeded by other four, which grow much more slowly. From these last four corner teeth it is that the animal's age is distinguished, for they are somewhat hollowed in the middle, and have a black mark in the cavities. At five years old these teeth scarcely rise above the gums; at six, their hollow pits begin to fill up, and turn to a brown spot; and before eight years the mark generally disappears. A Horse's age is also indicated by the canine teeth or tusks, for those in the under jaw generally shoot at three years and a half, and the two in the upper at four; till six they continue sharp at the points; but at ten they appear long and blunted. There are, however, many circumstances which render a decision as to the age of the Horse very difficult after the marks are effaced from the lower incisors; and it should be observed, that Horses which are always kept in the stable have the mark much sooner worn out than those that are at grass; to say nothing of the various artful tricks resorted to by dealers and jockeys to deceive the inexperienced and unwary.

The Horse has three natural paces, namely, walking, trotting, and galloping. In the first, he moves off with one of his fore feet, which is immediately followed by the hind leg of the opposite side; and so with the other fore and hind leg. His trot differs from his walk, not only in its greater velocity, but also in this, that he always moves the two opposite legs together. The gallop is a series of leaps, and it is true and regular, when the horse lifts his two feet on one side at the same time, and follows with those on the other side. These three natural paces may be converted into artificial paces by art and skill. But as this is a part of the science of horsemanship, it is not necessary to be more than adverted to in this place: we shall therefore merely observe, that the trot is the pace which enables all quadrupeds to balance and support themselves with ease and firmness; and it is therefore the most proper for ensuring a free determined motion to the Horse.

An old writer, Cavendish, says, a perfect Horse should have the breast broad, the hips round, and the mane long, the countenance fierce like a lion, a nose like a sheep, the head, legs, and skin of a deer, the throat and neck of a wolf, and the ear and tail of a fox. This is as graphic as it is concise; but to be serviceable it is much too general: we therefore turn to the pages of the Penny Cyclopædia for fuller particulars as to the proper conformation of the Horse. "The head should not be disproportionally large, and should be well set on; i. e. the lower jawbones should be sufficiently far apart to enable the head to form that angle with the neck which gives free motion and a graceful carriage to it, and prevents its bearing too heavy on the hand. The eye should be large and a little prominent, and the eyelid fine and thin. The ear should be small and erect, and quick in motion. The lop-ear indicates dulness or stubbornness; and when it is habitually laid too far back upon the neck, there is too frequently a disposition to mischief. The nostril in every breed should be somewhat expanded: it can hardly be too much so in the Racer, the Hunter, the Roadster, and the Coach-horse, for this animal breathes only through the nostril, and would be dangerously distressed when much speed is required of him, if the nostril could not dilate to admit and to return the air. The neck should be long rather than short. It then enables the animal to graze with more ease, and to throw his weight more forward, whether he is in harness or galloping at the top of his speed. It should be muscular at its base, and gradually become fine as it approaches the head. The withers should be somewhat high in every Horse, except perhaps that of heavy draught, and it does not harm him, for there is larger surface for the attachment of the muscles of the back, and they act at greater mechanical advantage. A slanting direction of the shoulder gives also much mechanical advantage, as well as an easy and pleasant action, and a greater degree of safety. It must not however exist in any considerable degree in the Horse of draught, and particularly of heavy draught. The chest must be capacious, for it contains the heart and the lungs, the organs on which the speed and endurance of the Horse depend. Capacity of chest is indispensable in every Horse, but the form of the chest admits of variation. In the waggon-horse the circular chest may be admitted, because he seldom goes at any great speed, and there is comparatively little variation in the quantity of air required; but in other Horses the variation is often fearful. The quantity of air expended in the gallop is many times that required in hard work. Here we must have depth of chest, not only as giving more room for the insertion of the muscles on the action of which the expansion of the chest depends, but a conformation of the chest which admits of that expansion. That which is somewhat straight may be easily bent into a circle when greater capacity is required; that which is already circular admits of no expansion. A few words more are all that our limits permit us to add, and they contain almost all that is necessary on the conformation of

the Horse. The loins should be broad, the quarters long, the thighs muscular, and the hocks well bent and well under the Horse."

Some peculiarity of breed distinguishes the Horses of most civilized countries; or, rather, there is some particular breed for which one country is more celebrated than others. Thus there is the Spanish Genette, a small but fleet and beautiful variety, which is generally ranked next to the Barb: their heads are rather large, their manes thick, their ears long and well pointed, their shoulders somewhat heavy, their chests full and large, and their legs clean and handsome. They move with great ease, and carry themselves very gracefully. They are usually of a black or dark bay colour; and some of them, particularly such as come from the province of Andalusia, are said to possess, in a superior degree, high courage, docility, and other estimable qualities.—France produces a motley breed; adapted rather for the purposes of war than of the chase, and generally considered as heavy-shouldered. But great attention has of late years been paid to the improvement of them by crosses with the best bred English varieties; a remark, by the by, which may in a great measure be applied to the breed of Horses elsewhere throughout the continent. And we may safely assert, that whatever could be gained from long experience and careful assiduity, whatever wealth could procure, or skill effect, in order to arrive at perfection in the various breeds, and in the proper training, of this noble animal, has been fully attained in England.

It is impossible to say at what early period the Horse was first considered an object of interest in Britain; but we know that when our rude and warlike ancestors had to contend with the Roman invaders, they depended much on their cavalry and war-chariots, which they managed with great skill and dexterity. We likewise know that the Saxons paid great attention to the Horse, and took considerable pains to improve the natural breed. King Athelstan obtained several German running-horses from Hugh Capet of France; and William the Conqueror, with his Norman followers, introduced the Spanish horse, in whose veins ran the blood of the swift-footed Barb. When the Crusaders returned from the Holy Land, they brought with them many a noble Eastern steed; and from that time a greater admixture of Arabian blood with the Horses of Europe was a natural consequence. It must however be apparent, when we remember with what a heavy load of armour both horseman and horse were encumbered, that our mail-clad warriors must necessarily have required horses of prodigious strength, and that fleetness was of far less consequence to them than weight and mettle. King John, who appears to have devoted much attention to the breed of Horses, imported a hundred choice stallions of the Flanders kind; to which act may probably be traced the foundation of that character for size, strength, and vigour, which English horses, whether for draught or war, have since maintained. Subsequent monarchs also evinced a strong desire for keeping up, and diminish of Horses which, in a national p had become so valuable, and th tion was accordingly forbidde period to which we have been breeds of Horses most in repute weight and strength were those and Normandy. In course of tim brous armour, the battle-axe were laid aside; and when the carbine, with the lighter dresses valry, were introduced, speed a were deemed of more account th power. At length the sports of gaged the attention and became ment of kings and princes; the the land vied with each other in choicest studs, the English Hun matched for ardour in the chase with the most persevering endu the English Race-horse distance petition.

The Race-horse. "Whether blood of our finest Racers be pu or a mixture of the Arabian an the best of our English stock," M serves, "can scarcely, with all t of our turf genealogy, be positi tained: but it is undoubted tha celebrated Horses that this coun produced are traceable from son to some or other of the well-know Barbary, or Turkish stallions wh different times been imported. T tance of the influence of the sire Horses is in no point more cle than by the fact that the pro most celebrated Horses have ga tained the reputation of their s the descendants of Eclipse numb than three hundred and sixty-fiv "The Racer is generally distingu beautiful Arabian head; his fine set-on neck; his oblique length ders; well-bent hinder legs; his cular quarters; his flat legs, from the knee downwards; an elastic pastern. From this pecu try, however, many celebrated have shown remarkable deviation they have not failed to enter into tion and enjoyment of the sport every muscle, and evincing in

ergy in their endeavours to outstrip their competitors.

The Hunter. It is generally allowed that this fine animal, whose spirit is only equalled by his endurance of fatigue, and whose speed is on a par with his beautiful form, presents a happy combination of those

THE HUNTER.

qualities which give swiftness to the racer, power to the charger, and muscular power to the draught-horse. "The first property of a good hunter is, that he should be light in head. For this purpose his head must be small; his neck thin, especially beneath; the crest firm and arched; and his jaws wide. The head will then be well set on. It will form a pleasant angle with the neck, which gives a light and pleasant mouth." The compact and serviceable Roadster, "hunter in miniature," as a perfect specimen of this truly valuable animal has been called; the splendid Carriage Horse, with

CHIEF-HORSE.

arched crest and high action; the powerful Dray Horse, whose united strength and size (derived from the Suffolk Punch and the Flanders breed) are unequalled; the round-chested and long-backed Suffolk Punch Horse; and the patient Cart Horse,—have each their peculiar merits, and require careful attention to the breed and management. We have also some other varieties excellent in their kind: the useful Galloway; the diminutive hardy Shetland Pony; and the sturdy New Forest Pony bred in the New Forest. But our limits have long warned us to bring this article to a close: we therefore beg to refer our readers to the various works which are entirely devoted to "the Horse" for whatever further information may be required; and conclude by tritely remarking, that according to the degree of cultivation bestowed on them, Horses improve or degenerate; their qualities of sagacity and docility alone remaining inherent.

CLYDESDALE CART-HORSE.

A curious point, and one of great interest in the investigation of zoological relations, which may be properly introduced in this place, is—"that the characters of the male parent of the mother's first progeny show themselves in her subsequent offspring by other males, however different those males may be in form and colour. Mr. Bell observes that this truth has been illustrated by him when treating on the Dog and on the Hog, and he adds that it receives a remarkable and interesting confirmation from the case of a mare belonging to the Earl of Morton, to which he had before alluded. In that case the mare was young, and after producing the female hybrid by the Quagga, had first a filly, and afterwards a colt, by a fine black Arabian Horse. They both resembled the Quagga in the dark line along the back, the stripes across the forehead, and the bars across the legs: in the filly the mane was short and stiff, like that of the Quagga; in the colt it was long, but so stiff as to arch upwards and hang clear of the sides of the neck; in other respects they were nearly pure Arabian. This and other such cases should not be forgotten by breeders of animals, who are anxious about the perfection of their stock, and should make them particularly careful as to the male influence which first makes its impression on the female.

The mode of catching and taming wild horses in South America is so well described by Mr. Darwin, in his "Researches," and shows so strikingly what mastery over the brute creation man can attain, that we trust it will be considered an appropriate addendum to the foregoing. "A troop of wild young horses is driven into the corral, or large enclosure of stakes, and the door is shut. We will suppose that one man alone has to catch and mount a horse, which as yet had never felt bridle or saddle. I conceive, except by a Gaucho, such a feat would be utterly impracticable. The Gaucho picks out a full-grown colt; and as the beast rushes round the circus, he throws his lazo so as to catch both the front legs. Instantly the horse rolls over with a heavy shock, and

whilst struggling on the ground, the Gaucho, holding the lazo tight, makes a circle, so as to catch one of the hind legs, just beneath the fetlock, and draws it close to the two front. He then hitches the lazo, so that the three legs are bound together. Then sitting on the horse's neck, he fixes a strong bridle, without a bit, to the lower jaw. This he does by passing a narrow thong through the eye-holes, at the end of the reins, and several times round both jaw and tongue. The two front legs are now tied closely together, with a strong leathern thong, fastened by a slip-knot. The lazo, which bound the three together, being then loosed, the horse rises with difficulty. The Gaucho now holding fast the bridle fixed to the lower jaw, leads the horse outside the corral. If a second man is present (otherwise the trouble is much greater) he holds the animal's head, whilst the first puts on the horsecloths and saddle, and girths the whole together. During this operation, the horse, from dread and astonishment at thus being bound round the waist, throws himself, over and over again, on the ground, and, till beaten, is unwilling to rise. At last, when the saddling is finished, the poor animal can hardly breathe from fear, and is white with foam and sweat. The man now prepares to mount, by pressing heavily on the stirrup, so that the horse may not lose its balance; and at the moment he throws his leg over the animal's back he pulls the slip-knot, and the beast is free. Some "domidors" (horse-subduers) pull the knot while the animal is lying on the ground, and, standing over the saddle, allow it to rise beneath them. The horse, wild with dread, gives a few most violent bounds, and then starts off at full gallop: when quite exhausted, the man, by patience, brings him back to the corral, where, reeking hot, and scarcely alive, the poor beast is let free. Those animals which will not gallop away, but obstinately throw themselves on the ground, are by far the most troublesome. This process is tremendously severe, but in two or three trials the horse is tamed. It is not, however, for some weeks that the animal is ridden with the iron bit and solid ring; for it must learn to associate the will of its rider with the feel of the rein, before the most powerful bridle can be of any service."

HORSE-GUARD. This name, we are informed by Mr. Doubleday, is applied in the United States to Hymenopterous insects of the genus *Moncdula*, from their habit of capturing Gadflies (*Tabani*).

HOUND. There are several species of Dogs which come under this appellation, as the Foxhound, Greyhound, Bloodhound, &c. which will be found in their proper alphabetical order in this volume. Hounds may be distinguished into such as discover and pursue the game by sight; and those which find and pursue it by the excellence of their scent.

HOUND-FISH. The name applied sometimes to different species of the Shark family. [See Dog-fish.]

HOWLET. (*Strix aluco.*) A bird of the Owl kind, so called from its mournful, howling voice. It measures eighteen inches in length; the head, back, wings, and tail, are cinereous, with black and white spots; the head is large, round, and full-feathered; and the wings reach to the extremity of the tail.

HUMBLE-BEE. (*Bombus.*) Of the villose or hairy bees popularly called Humble-bees, there are several species. One of the largest and most common is the *Apis lapidaria* of Linnæus, so named from the circumstance of its nest being generally situated in stony or gravelly places. This species is entirely of a deep black colour, except the end of the abdomen, which is red or orange-coloured, more or less deep in different individuals. The female is of large size, measuring nearly an inch in length; the male is considerably smaller, and the labouring bee is still smaller than the male.

Humble-bees are the only tribe besides the hive-bees that in this part of the world construct nests by the united labour of the society. Their habitations are sometimes excavated at a considerable depth in the ground, and sometimes built upon its surface, beneath stones, &c. The societies consist, in some species, of about fifty or sixty individuals; in others of as many as two or three hundred. They contain males, females, and workers or neuters. The females alone survive the winter; and they employ the first fine days in spring to commence their nests, which they very quickly excavate, and supply with a mixture of honey and pollen for the nourishment of the first brood, which consists exclusively of workers. These, after having undergone their transformations, assist in the construction of new cells, the collection of the food, and the rearing of the larvæ. In autumn the males and females are produced; and at the commencement of winter all but the larger females die; these remain in a sort of chamber distinct from the rest, but, as it would appear, without any supply of food. It should be observed that though the Humble-bees collect honey as well as the common ones, it is neither so fine nor so good: nor is their wax so clean, or so capable of fusion.

HUMBLE-BEE FLY. (*Bombylius.*) A name very usually given to a species of the large order Diptera, comprehending species of different sizes, but all agreeing in the great resemblance they bear, at first sight, to the Humble-bees of the smaller or middle-sized kinds; but on examination, it will appear that they are destitute of trunks, and have but one pair of wings. Nature has assigned for the larvæ of some of the species a very singular habitation—the intestines of horses, or under the thick skins of oxen. In the latter case, the worm hatched from the egg of its parent fly, deposited there, forms a tumour which furnishes it with food and lodging, and in the middle there is an aperture for the purpose of respiration. Some, however, feed on vegetable substances, and one species in particular shows a strong predilection for the bulbous roots of flowers.

…rior lustre of the ruby, the sapphire, …merald. This is their general cha… …but there are some species whose … is comparatively obscure, exhibit… …a golden-green tinge, diffused over …wn or purplish colour of the back …gs. In size they vary from that of … to a humble-bee; the muscles of …gs are very strong, and their plu… …age and compact: they are almost …motion; and the velocity with which …t through the air, and the rapidity… …r motion of their wings, are quite …rable. These lovely gems of ani… …nature are peculiar to America, and …exclusively tropical: some species, …, migrate into the temperate regions …r side of the equator during the …mon; and stragglers have occasion… …n met with even in cold situations. …e characterized by a long and ex… …slender bill, inclosing an extensile …ractile tongue, which is divided into …ments from the middle to the tip, by …hey extract the nectar and the small …which may lurk in the recesses of …

Their feet are very small, their …ng and narrow; the mechanism of …ole form being, in fact, like that of …ift, formed for rapid and powerful …When hovering before a flower, they …spended in the air, rather than sus… …by the vigorous movement of their …; and it is to the constant murmur …ng sound, caused by the rapid vibra… …them, that these beautiful little crea… …ives their name. How greatly they …d to the richness of a Transatlantic …e, when fluttering from flower to …n the morning sunbeams!

…rever a creeping vine opens its fra… …lusters, or wherever a tree-flower …may these little things be seen. In

…the apathetic bee, once roused, had put forth powers that drove the invader from the field."—*Edwards's Voyage up the Amazon.*

The Humming-birds are generally divided into two classes—those with curved bills, and those whose bills are straight. We shall endeavour to give a description of the most remarkable species; reserving some of them for insertion under the article *Trochilidæ*. Their nests are very beautifully constructed, being usually composed of vegetable down, such as that of the cotton-plant or silk-cotton tree; and being covered on the outside with bits of lichen, leaves, moss, &c. Sometimes they are suspended from the extremities of twigs of the orange, the pomegranate, or the citron-tree; and sometimes from a house, provided they can find convenient twigs for the purpose: for it is to be observed, that although these birds are most numerous in the dense forests, where the wild blossoms almost vie with themselves in splendour, they are also seen in the gardens of cultivated districts, and do not appear at all disinclined to the society of Man, though it is very difficult to keep them in a state of domestication. The Humming-bird is very irascible, two males scarcely ever meeting without a contest ensuing: they will also attack birds of a much larger size, as wrens or king-birds, and they sometimes even have contests for a flower with the humble-bee.

Topaz-throated Humming-bird. (*Trochilus pella.*) Both in size and colours this species is decidedly superior to any others of the curve-billed kind. Its body is as large as that of a wren; and from the tip of the bill to the end of the two long-tailed feathers, it measures from eight to ten inches. The upper part of the head and neck are of a glossy black, the back and smaller wing-

the two middle feathers of the tail no longer than the rest. This species is said to be principally found in Surinam and Guiana, where it frequents the banks of rivers and brooks, the surface of which they skim after the manner of swallows.

Fork-tailed Humming-bird. (*Trochilus furcatus.*) This species is chiefly noticeable for the shining beauty of its tail-feathers, which appear of a brilliant blue, green, or golden colour, according to the lights in which they are seen, and form a very long and broad tail in proportion to the body of the bird: the crown of the head is blue, and a shining golden lustre pervades the rest of the plumage, but it is trifling in comparison with the beauty of the tail: the legs, feet, and claws are black.

Bar-tailed Humming-bird. (*Trochilus syrmatura.*) This elegant bird is nearly eight inches long: its colour is green-gold, but not very bright, except on the throat, where it is rich and brilliant: the tail is long and strongly forked, and the feathers are velvet-black, each being crossed by a broad golden crimson bar, and rounded at the end: bill and legs black. Native of Peru.

Harlequin Humming-bird. (*Trochilus multicolor.*) A highly elegant species, remarkable for the variety of its colours. Its length is about four inches; the bill long, slightly bent, and of a pale yellow hue: the crown of the head, throat, neck, breast, upper part of the back, rump, and wing-coverts, fine gilded grass-green: the whole upper part of the neck, ultramarine blue, divided from the green of the back by a narrow black bar; the wings and tail light brown; belly and vent-feathers red; wings long in proportion to the bird; tail rounded at the tip.

Crested Humming-bird. (*Trochilus cristatus.*) This bird is a native of the West Indies: the bill is slender, sharp-pointed, incurvated, and blackish; the top of the head, from the bill to the hinder part, which terminates in a crest, is partly green and partly blue, and shines with a most brilliant metallic lustre: the plumage on the upper part of the body and wings is dark green intermixed with gold colour; the breast and belly are of a dingy grey; the tail is a bluish-black, glossy on the upper surface; and the legs and feet, which are very small, are blackish.

Sapphire and Emerald Humming-bird. (*Trochilus bicolor.*) The two brilliant colours with which this bird is invested, not only merit the title of the gems by which they are called, but possess a vivid metallic splendour not exhibited by the gems themselves. The sapphire colour covers the head and throat, beyond which it blends with the lucid golden emerald colour of the breast, belly, and back: the wings are brown; the tail glossy bluish-black; and the belly white: the upper mandible is black, the lower whitish. Native of South America and the West Indies.

Ruby-throated Humm
chilus colubris.) This be
about three inches and a h
the tip of the bill to that o
is black; the crown, upper
back, and coverts of the w
resplendent and variable
colour; the chin and thro
in brilliancy, changing,
light, either into a burni
or a deep brown tint: the
are white; the wings a
brown, but the two mi
green. It is a native of,
the southern parts of the
nent during the whole ye
North America only in su
in Florida, Carolina, and
India islands; and is eve
In that entertaining book,
Naturalist," this bird and
noticed in one of the "C
"*C.* Ha! there is what I
to see, a Humming-bird su
There are two of them: h
view of them.—*F.* No, no
are, and remain quite sti
low voice; for on the sli
their brilliant little eyes are
direction, they shoot off wi
and speed of an arrow. Se
on the wing, in front of th

M. American Rumi
(Trochilus col

stationary, while their lo
serted, but their wings vib
as to be only visible as a
on each side.—*C.* One of t
vanished, but I did not s
I was watching him.—*F.*
about a yard; you may s
again to the right of wher
These starts are so sudden
they are often lost to the
very little and how very be
glitters in the sun with gre
the throat is just like a gl
Now they rest on a twig
perceive has not the brill
other.—*F.* That is the
respects her plumage is
male. It is the Ruby-thr
bird (*Trochilus colubris*),

: whole of this continent, at least to tude of 37 degrees north."

r Humming-bird. (*Trochilus mini-* This is the smallest of the whole d tribe; being about an inch and a in length, and weighing only about grains: the general colour on the arts is green gold; the quill and tail glossy violet-brown, and the exterior thers edged and tipped with white; ter parts of the body are of a dull and the legs and feet black. Native al parts of South America, and of the West India islands.

ong-tailed Humming-bird (*Tro-* olytmus) is called by Mr. Gosse "the American ornithology;" its slender velvet crest, emerald bosom, and ned tail-plumes, rendering it one of t elegant even of this most brilliant The length of the male is ten inches quarter; wings expanded, six and ghths, and longest tail-feather seven nd a half. Irides black; beak coral tip black; feet purplish-brown, soles Crown, hind head, and nape deep

-tailed Humming-bird; male. (Trochilus polytmus.)

-black, very slightly glossed; back, wing, and tail-coverts, rich golden wings purplish-black; tail deep with bluish gloss, the uropygials, and the outer edges of the others, glossed with golden green, varying in intensity. The tail is slightly forked, the feathers regularly graduating from the uropygials outwards, save that the outmost but one is exceedingly lengthened. Throat, breast, and belly, gorgeous emerald-green, extending to the thighs; vent and under tail-coverts, purpled black. The plumage of the hind head long and loose, descending in two lateral tufts upon the nape, which are to some extent erectile. The whole upper plumage of the female, from the hind head, is rich golden green; tail blue black, the exterior two feathers on each side broadly tipped with white: uropygials golden-green. Wings as in the male. Under parts white, the feathers having round tips of metallic green on the sides of the neck, and being mingled with green ones on the sides of the body.

"The Long-tail is a permanent resident in Jamaica, and is not uncommonly seen at all seasons and in all situations. It loves to frequent the margins of woods and road-sides, where it sucks the blossoms of the trees, occasionally descending, however, to the low shrubs. There is one locality where it is abundant, the summit of that range of mountains just behind Bluefields, and known as the Bluefields Ridge. Behind the peaks which are visible from the sea, at an elevation of about half a mile, there runs through the dense woods a narrow path, just passable for a horse, overrun with beautiful ferns of many graceful forms, and always damp and cool. No habitation occurs within several miles, and no cultivation, save the isolated provision grounds of the negroes, which are teeming with enormous arums, and these are hidden from view far up in the thick woods. The refreshing coolness of this road, its unbroken solitude, combined with the peculiarity and luxuriance of the vegetation, made it one of my favourite resorts. Not a tree, from the thickness of one's wrist up to the giant magnitude of the hoary figs and cotton trees, but is clothed with fantastic parasites; begonias with waxen flowers, and ferns with hirsate stems, climb up the trunks; enormous bromelias spring from the greater forks, and fringe the horizontal limbs; various orchideæ with matted roots and grotesque blossoms droop from every bough, and long lianes, like the cordage of a ship, depend from the loftiest branches, or stretch from tree to tree. Elegant tree-ferns and towering palms are numerous; here and there the wild plantain or heliconia waves its long flag-like leaves from amidst the humbler bushes, and in the most obscure corners over some decaying log, nods the noble spike of a magnificent limodorum. Nothing is flaunting or showy; all is solemn and subdued; but all is exquisitely beautiful. Now and then the ear is startled by the long-drawn measured notes, most richly sweet, of the Solitaire, itself mysteriously unseen, like the hymn of praise of an angel. It is so in keeping with the solitude, and with the scene, that we are unconsciously arrested to admire and listen. The smaller wood consists largely of the plant called Glass-eye berry, a Scrophula-

rious shrub, the blossoms of which, though presenting little beauty in form or hue, are pre-eminently attractive to the Long-tailed Humming-bird. These bushes are at no part of the year out of blossom, the scarlet berries appearing at all seasons on the same stalk as the flowers. And here at any time one may with tolerable certainty calculate on finding these very lovely birds. But it is in March, April, and May that they abound: I suppose I have sometimes seen not fewer than a hundred come successively to rifle the blossoms within the space of half as many yards in the course of a forenoon. They are, however, in no respect gregarious; though three or four may be at one moment hovering round the blossoms of the same bush, there is no association; each is governed by his individual preference, and each attends to his own affairs."

"The Humming-birds in Jamaica do not confine themselves to any particular season for nidification. In almost every month of the year I have either found, or had brought to me, the nests of Polytmus in occupation. Still, as far as my experience goes, they are most numerous in June; while Mr. Hill considers January as the most normal period. It is not improbable that two broods are reared in a season. In the latter part of February, a friend showed me a nest of this species in a singular situation, but which I afterwards found to be quite in accordance with its usual habits: it was composed wholly of moss, and suspended to one of the fibres, not thicker than whipcord, belonging to the root of a tree, and contained two eggs. Mr. Gosse goes on describing, in his peculiarly pleasant manner, his further operations in endeavouring to become acquainted with every particular respecting the nidification and general habits of this interesting species. We select one example. "On the 12th of November, we took, in Bluefields morass, the nest of a Polytmus, containing two eggs, one of which had the chick considerably advanced, the other was freshly laid. The nest was placed on a hanging twig of a black-mangrove tree, the twig passing perpendicularly through the side, and out at the bottom. It is now before me. It is a very compact cup, one inch and three quarters deep without, and one inch deep within; the sides about a quarter of an inch thick, the inner margin a little over-arching, so as to narrow the opening: the total diameter at top, one inch and a half; one inch in the clear. It is mainly composed of silk cotton very closely pressed, mixed with the still more glossy cotton of an *asclepias*, particularly round the edge; the seed remaining attached to some of the filaments. On the outside the whole structure is quite covered with spider's web, crossed and recrossed in every direction, and made to adhere by some viscous substance, evidently applied after the web was placed, probably saliva. Little bits of pale green lichen, and fragments of thin laminated bark, are stuck here and there on the outside, by means of the webs having been passed over them. The eggs are long-oval, pure white, save that, when fresh, the contents produce a reddish tinge, from the t the shell."

FEMALE LONG-TAILED HUMMING-BIRD.

"All the Humming-birds hav less the habit when in flight of the air, and throwing the body a rapid and odd contortions; this most the case with Mango, but more observable in Polytmus fro that such motions have on the be feathers of the tail. That the ob quick turns is the capture of i sure, having watched one thus eng close to me; I drew up and carefully, and distinctly saw the in the air, which it pursued and heard repeatedly the snapping My presence scarcely disturbed * * * When I left England, myself out for the attempt to radiant creatures alive to this co after a little acquaintance with th species, Polytmus seemed, from its abundance. Its size, its dwell mountain habitat, to be the spec most likely to succeed, and mos the effort. My expectations w pointed; yet as the efforts thems me more familiar with their reader, I trust, will pardon som of detail in the narration of these

[We have already so fully avail of Mr. Gosse's labours, that we b for further information, to the and we take the opportunity him, at the same time, that his be far more inclined to applaud demn what he is pleased to call lixity." We have personally d pleasure and instruction from and we trust that many who volume will be induced, from t they have seen, to become posse Birds of Jamaica;" for a mos specimen of descriptive ornitho

naturalist, thoroughly
t, and perfectly com-
owledge to the world
orn.] The works of
Gould on Humming-
of these living jewels.
the Zoological Gardens
Mr. Gould's display of
pes of these birds.

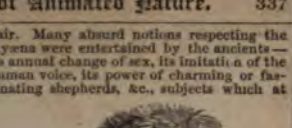
genus.) An Acan-
nging to the family
e English settlers on
huron by the name of
ord boar being almost
ch. It haunts deep
of rivers or edges of
es a hook baited with
e of white rag trailed
ng for mackerel. The
d well-flavoured; and
high estimation as an

known genus of digi-
us quadrupeds, distin-
tuberculous teeth or
carnivorous, which,
nformation, aided by
h of their jaws, are
he hardest substances.
ena is short, and re-

ity; the muzzle also
aporal muscles, which
ogether with those of
ully developed. The
eyes are projecting,
ge. The neck, chest,
remely powerful; but
low, and the hind-legs
chis. It has four toes
ed with blunt, stout,
Beneath the tail is a
ologous to that of the
ing a similar odorous

IPED HYÆNA (*Hyæna*
Asiatic Turkey, Syria,
of a brownish gray co-
eral transverse dark
body, which are more
of a deeper colour on
neck along the upper
a strong bristly mane;
e ears are rather long,
early naked; the tail
long, and very full of

hair. Many absurd notions respecting the Hyæna were entertained by the ancients—its annual change of sex, its imitation of the human voice, its power of charming or fascinating shepherds, &c., subjects which at



STRIPED HYÆNA.—(HYÆNA VULGARIS.)

the present day scarcely deserve to be mentioned. Hyænas generally inhabit caverns and rocky places, prowling about at night to feed on the remains of dead animals, or whatever living prey they can seize; but they seldom attack man, except in self-defence. As carrion-feeders they seem destined to fill up an important station in the economy of nature, by cleansing the earth of the decaying carcasses of the larger beasts, whose remains might otherwise infect the atmosphere with pestilential effluvia. Though not gregarious from any social principle, they sometimes assemble in troops, and follow the movements of an army in order to feast on the bodies of those who perish on the field of battle: nay, it is asserted—nor is it inconsistent with their insatiable voracity and the peculiar strength of their claws—that they have been often known to tear newly-buried corpses out of their graves.

The aspect of the Hyæna seems to indicate a gloominess and malignity of disposition, with which its manners in a state of captivity appear in general to correspond: savageness and intractability mark its every look and movement; and it is said that its courage is equal to its rapacity. It was formerly supposed, and universally believed, that the Hyæna was untameable; but that it is possible, however difficult it may be, to tame it, there now exists not the shadow of a doubt. A remarkable peculiarity in this animal is, that when he is first obliged to run, he always appears lame for a considerable distance, and that, in some cases, to such a degree as to induce a belief that one of his legs is broken; but after running for some time, this halting disappears, and he proceeds on his course very swiftly. Mr. Bruce, the persevering and entertaining Abyssinian traveller, says, "I do not think there is any one that has hitherto written of this animal who ever saw the thousandth part of them that I have. They were a plague in Abyssinia in every situation, both in the city and in the field, and, I think, surpassed the sheep in number. Gondar was full of them from the time it turned dark till the dawn of day, seeking the different pieces of slaughtered carcasses which this cruel and unclean people expose in the streets without burial, and who firmly believe that these animals are Falasha from the neighbouring mountains, transformed by magic,

and come down to eat human flesh in the dark in safety." "One night in Maitsha, being very intent on observation, I heard something pass behind me towards the bed, but upon looking round could perceive nothing. Having finished what I was then about, I went out of my tent, intending directly to return, which I immediately did, when I perceived large blue eyes glaring at me in the dark. I called upon my servant with a light, and there was the Hyæna standing nigh the head of the bed, with two or three large bunches of candles in his mouth. To have fired at him I was in danger of breaking my quadrant or other furniture, and he seemed, by keeping the candles steadily in his mouth, to wish for no other prey at that time. As his mouth was full, and he had no claws to tear with, I was not afraid of him, but with a pike struck him as near the heart as I could judge. It was not till then he showed any sign of fierceness; but, upon feeling his wound, he let drop the candles, and endeavoured to run up the shaft of the spear to arrive at me, so that, in self-defence, I was obliged to draw a pistol from my girdle and shoot him, and nearly at the same time my servant cleft his skull with a battle-axe. In a word, the Hyæna was the plague of our lives, the terror of our night-walks, the destruction of our mules and asses, which above all others are his favourite food."

The SPOTTED HYÆNA bears a considerable resemblance to the former species, but is marked with numerous round blackish-brown spots instead of stripes, and the mane is much less. Its habits are similar to the Striped Hyæna, and it commits equal ravages

SPOTTED HYÆNA.—(HYÆNA CROCUTA.)

amongst the cattle of the districts in which it resides. This species inhabits many parts of Africa, but is numerous round the Cape of Good Hope, where it is much dreaded. It rarely, however, moves abroad during the day, but passes that period in a state of repose, either in holes in the ground, or in retired situations densely covered with bush. Till lately, it seems, Hyænas were in the habit of paying nightly visits to the streets of Cape Town, and were regarded as very useful in carrying away the animal refuse; but partly from better regulations now existing in the town, and partly from the number of these animals having greatly decreased, this no longer occurs. In the interior of Southern Africa the ravages of this beast are still frightful, and it is n thing to find that they have en of a native in the night, and dreadfully mangled some of branches of the family. And standing this ferocity, the Spot sometimes domiciliated in the peasantry, among whom, we is preferred to the dog himse ment to his master, for general even, it is said, for his qualifica chase."

Another species (*Hyæna* mi tioned by Cuvier, as differing f ceding by having stripes on the of the body being of a dark gr It inhabits the south of Africa, there under the name of the

HYÆNA-DOG. A name Wild Dog of the settlers at the smaller and more slender tha Hyæna or the Wolf. In its logical structure it agrees with it has no mane; but the head Hyæna's, and it has only four foot. Its colour is a reddish patches of black and white inte and muzzle black, with a stro passing from them up the cente head to between the ears. It i and active; is very destructiv which are less fleet and po itself; and commits great hav It is the *Hyæna venatica* of L Travels, and the *Lycaon tem* Gray.

HYALEA. A genus of Mo mals belonging to the class P distinguished by their wing-li of locomotion. They are foun lantic and Mediterranean, and

known in this country by the of Venus' Chariot. It is globo transparent, with a triangula the upper part where the dorsal vances beyond the ventral, whi dorsal more flat; lower extre date. The head of the anima distinct, and it has no eyes.

HYDATINA, or HYDATI denoting several species of para cules, or cyst-like productions, bodies of men and animals, a possessed of extraordinary pow duction.

HYDRA. The name given minute polypi found in stag

water, where numbers are often seen clustering upon aquatic plants, &c. These animals present us with the simplest kind of structure which has yet been ascertained. The Hydra consists simply of a fleshy tube, open at both extremities, and the aperture of the tube serving as a mouth, which is situate in the more dilated end, and this mouth is provided at its margin with a single row of *tentacula*, or long flexible arms, which diverge from each other like the spokes of a wheel. Looking to this animal, we may suppose that nature has formed it to prove that animal life may be carried

HYDRA FUSCA.

on without the aid of the complicated machinery which she has given to the higher orders of creation. The *Hydra viridis*, or Green Polype, has the power of fixing itself in an erect position by the foot, and if it wishes to change place, it slowly bends till its head touches the plane on which it is moving, and adheres to it by the mouth, or one or two of its tentacula; the foot is then detached, and by a curve of the body placed close to the head, where it is again fixed, preparatory to a new step, which it performs by a repetition of the same movements. When in search of prey, the Hydra permits its arms to float loosely through the water; which means it succeeds in obtaining a supply of food; for if, in their active course, any of the minute crustacea and aquatic worms should but touch one of the tentacula, they are immediately seized, other arms are soon twined round it, and the unfortunate victim speedily conveyed to the mouth.

With regard to the powers of reproduction possessed by these simple animals, it is to be observed that, when mature and well supplied with food, minute gemmules or buds appear to become developed from the common substance of the body: these gemmæ appear at first like delicate gelatinous tubercles upon the exterior of the parent polype; but, as they increase in size, they usually assume a similar form, and become perforated at their unattached extremity. During the first *period of the formation of these sprouts, they are evidently* continuous with the general substance from which they arise; but, at length, when the young is fully formed and ripe for independent existence, the point of union between the two becomes more and more slender, until a slight effort on the part of either is sufficient to detach them, and the process is completed.

But among the many remarkable features in the history of the Hydra, that which appears the most so, is its capability of reproducing the whole structure from separate portions of it. New tentacula will replace any which have been accidentally lost or removed. If the body is divided transversely, each segment will become a new animal; the upper one closing the aperture at its base, and the lower one speedily developing tentacula around the newly-formed mouth. If divided longitudinally, each half will, in a very short space of time, begin to ply its tentacula; nay, if cut transversely into several segments, each will in time become a perfect animal.—Trembly was the first man who gave a detailed account of this curious polype. [See POLYPI.]

HYDRACHNA. A genus of aquatic insects closley allied to the *Acaridæ* (which see). One of the largest and by far the most elegant of the genus is the *Hydrachna geographica*, so named from the fancied map-like distribution of its variegations. Its shape is globular, and its colour a polished black, ornamented with red spots, which in a certain light have a kind of gilded lustre. The legs of this insect, as in the rest of the genus, are hairy; it swims with great celerity, and appears in almost constant motion. The eggs of the Hydrachna are small and round: the young, when first excluded, are furnished with six legs only; but they acquire two more legs after the first or second change of their skin.

HYDROBRANCHIATA. The first section of the order *Gasteropoda*, containing Mollusca which breathe water only.

HYDROCANTHARI, or WATER BEETLES. The name of a great group of Coleoptera, containing *Dytiscus*, *Colymbetes*, and numerous other genera.

HYDROCHŒRUS. [See CAPYBARA.]

HYDROMETRIDÆ. A family of insects, some species of which may be met with in almost every pond or stream, skimming along the surface, and turning about with the greatest rapidity. The body is boat-shaped, the hind feet serving as a rudder, while the two middle feet brush along the surface of the water, and give the required motion: the under side of the body is clothed with a thick coating of fine hairs, evidently intended to prevent the insect from coming in contact with the water.

HYDROPHILUS. A remarkable genus of aquatic insects, differing from that of Dytiscus only in the structure of the antennæ, which, instead of being setaceous, are short, *and furnished* with a clavated and perfoliated tip or knob. One large species, common in our ponds and ditches, is an inch

and a half long, oval, and of a deep brown colour, highly polished. The eggs are laid in a sort of cocoon, spun by the female, and coated with a gummy matter that is impervious to the water on which it floats. The larvæ are observed to prey on the smaller kinds of water-snails, tadpoles, &c., and appear very voracious; and they remain about two years before they change into pupæ or chrysalides. When the larva is arrived at

HYDROPHILUS PICEUS.

its full growth, it secretes itself in the bank of the water it inhabits, and having formed a convenient cell, lies dormant for some time; after which it divests itself of its skin, and appears in the form of a chrysalis; in this state it remains some time longer, when it again releases itself of its exuviæ, appears in its complete or beetle form, and as soon as the elytra or wing-cases acquire a sufficient degree of strength and colour; it comes forth from its retreat, and commits itself in its new form to its native element. It is a curious circumstance that some of the species of *Hydrophilidæ* found in this country exceed in size those from tropical climates; many of the species are, however, very minute. [See DYTISCUS.]

HYDROPHIS, or WATER-SNAKE. This genus of reptiles is very common in certain parts of the Indian Seas, where it feeds on fishes, and is considered excessively venomous. They have the back part of the body and tail very much compressed and

WATER SNAKE.—(HYDROPHIS.)

raised vertically, which, imparti the power of swimming, rem aquatic animals. They have scales a little broader than the the belly; the head small, nat ture, and covered with large plat species are found in the salt water and others in the Indian Ocean.

HYDRUS. A species of sm serpents, having the extremity of enlarged, and very much compres conformation gives them greater moving through the water. Th the intertropical parts of Asi neighbouring islands, and in some are very abundant.

HYLA. A genus of Batrachi known as *Tree Frogs*, and gene ferring from the common Frog speet excepting that the extrem of their toes is widened and rou sort of viscous palette, which en to adhere to the surfaces of bo climb trees, to which last they re the summer, in pursuit of insect deposit their eggs in water, and Into the mud in winter, like othe

The TREE FROG (*Hyla arbor* all other European species in of its colours, the elegance of its the agility of its movements; wh is smaller than any of the tri native of France, Germany, Italy other countries of Europe, but i in the British Islands. During t months its principal residence is o parts of trees, where it wanders foliage in quest of insects, which with extreme celerity, either ste towards its prey, or springing up sudden leap; and it is often seen itself by its feet to the under p leaves, to enjoy their shade. It the upper parts is green, more or the abdomen is whitish, and numerous granules: on each body is a dark violet-coloured st underneath with yellow, separati of the upper parts from the whi the lower. The body is short, smooth: the hind legs are wo slender; the fore feet have fo hind feet five toes, all of which nated by round, flat, and dilat under surface of which, being s tinous, enables the animal to perfect security from the leaves it can also adhere to any subst abdomen, which is covered with dular granules, by merely pre against it. Though the Tree F the woods during the summer on the approach of winter it re waters, and there submerging soft mud, or concealing itself banks, remains in a state of to again emerges in the spring, at w it deposits its spawn in the wa rest, in small clustered masses, at this period inflates its thro prising manner, and croaks in

be heard at an immense
their residence among the
erved to be particularly
ach of rain.

[See Ape, Long-armed.]

RA. An order of insects,
four naked membranous
hending many interesting
Wasps, Ants, Ichneumon-
terior wings are usually
the posterior; and the
framework on which the
wing is extended, are but
is furnished with man-
s, and the abdomen is
y an ovipositor or a sting.
f these insects greatly re-
order Lepidoptera (But-
, but differ in the number
ost hymenopterous insects
t state are constantly re-
either for the purpose of
r of preying upon the less
f their own class. Hy-
ts love the light of the
ng only during the day-
rest in the night, and in
her; and it must be ad-
xcel all other insects in
ariety of their instincts,
rfully displayed in the
by them in providing not
own welfare, but for the
wants of their offspring.
e these insects live chiefly
pollen of flowers, and the
he larvæ of the Saw-flies
nder the form of false
ugs, are leaf-eaters, and
ductive of much injury
rvæ of the *Xiphydriadæ*,
ils (*Uroceridæ*), are borers
nd consequently injurious
ited by them. Pines and
n their attacks. Some of
ences on the leaves and
uch as oak-apples, gall-
arise from the punctures
gall-flies (*Diplolepididæ*),
produced by their larvæ,
se swellings. The injury
, comparatively, of very
while, on the other hand,
ebted to these insects for
are extensively used in
medicine, and form the
ink. We may, therefore,
nsects among the benefac-
race. Immense numbers
other noxious insects are
ternal enemies, the larvæ
-flies (*Evaniadæ*, *Ichneu-*
cididæ), which live upon
tims, and finally destroy
ese ichneumon-flies (*Ich-*
a) are extremely small,
ttacks to the eggs of other
r puncture, and the little
l from the latter find a
of food to supply all their
larger eggs they occupy.
ryzididæ), and the cuckoo-

bees (*Hylæus*, *Sphecodes*, *Nomada*, *Melecta*, *Epeolus*, *Cœlioxys*, and *Stelis*), lay their eggs in the provisioned nests of other insects, whose young are robbed of their food by the earlier hatched intruders, and are consequently starved to death. The wood-wasps (*Crabronidæ*), and numerous kinds of sand-wasps (*Larradæ*, *Bembicidæ*, *Sphegidæ*, *Pompilidæ*, and *Scoliadæ*), mud-wasps (*Pelopeus*), the stinging velvet-ants (*Mutilladæ*), and the solitary wasps (*Odynerus* and *Eumenes*), are predaceous in their habits, and provision their nests with other insects, which serve for food to their young. The food of ants consists of animal and vegetable juices; and though these industrious little animals sometimes prove troublesome by their fondness for sweets, yet, as they seize and destroy many insects also, their occasional trespasses may well be forgiven. Even the proverbially irritable paper-making wasps and hornets (*Polistes* and *Vespa*) are not without their use in the economy of nature; for they feed their tender offspring not only with vegetable juices, but with the soft parts of other insects, great numbers of which they seize and destroy for this purpose. The solitary and social bees (*Andrenadæ* and *Apidæ*) live wholly on the honey and pollen of flowers, and feed their young with a mixture of the same, called bee-bread. Various kinds of bees are domesticated for the sake of their stores of wax and honey, and are thus made to contribute directly to the comfort and convenience of man, in return for the care and attention afforded them. Honey and wax are also obtained from several species of wild bees (*Melipona*, *Trigona*, and *Tetragona*), essentially different from the domesticated kinds. While bees and other hymenopterous insects seek only the gratification of their own inclinations, in their frequent visits to flowers, they carry on their bodies the yellow dust or pollen from one blossom to another, and scatter it over the parts prepared to receive and be fertilized by it, whereby they render an important service to vegetation.

HYRAX. A curious genus of small rabbit-like animals, inhabiting rocky and mountainous districts in Africa and Syria. The best known species are the Cape Hyrax,

ROCK RABBIT.—(HYRAX CAPENSIS.)

which inhabits Southern Africa; and the Syrian Hyrax, which is common to Syria, Arabia, and Abyssinia.—The CAPE HYRAX (*Hyrax Capensis*) resides in the hollows of rocks, leaping with great agility from crag to crag, though its walking or general pace is by no means quick. In size

and colour it greatly resembles the rabbits: it is of a thick form, with short limbs, the hinder being the longest, and it is destitute of a tail. The head is rather small; the ears short and rounded; the eyes large and black; the fore feet have each four soft pulpy toes, with flattish, rounded nails; the hind feet have only three, the inner one of

SKULL AND PART OF SKELETON OF HYRAX.

which is furnished with a sharp crooked claw. Both this and the Syrian Hyrax live in families, and take up their abode in caves or crevices in the sides of rocks. They subsist on grain, fruit, roots, the young shoots of shrubs, herbs, and grass: they are easily tamed, and are lively, active, docile, and cleanly when domesticated. Although the external appearance and the habits of the Hyrax appear to point it out as being a rodent quadruped, Cuvier says that its osteological structure shows it to belong to the *Pachydermata*, and that, notwithstanding the smallness of its proportions, it must be regarded as intermediate between the Rhinoceros and the Tapir. The Syrian species is doubtless "the Coney" of the Scriptures.

HYSTRIX. [See PORCUPINE.]

IBEX. A quadruped of the Goat kind, several distinct species of which are said to exist among the mountain ranges of Europe, Asia, and Africa, most of them resembling

IBEX.

each other in structure and habits. Those best known are the IBEX CAPRA, and the IBEX ÆGAGRUS, or Cas are each much larger and common domestic Goat; the other of these, that as owe its origin. The Ibex Carpathian and Pyrenc rious parts of the Alps, a deep boary brown; the body and insides of the lis paler or whitish hue: its and strong; it has a smal strong legs; very short tail. The horns, which and long, and of a deep marked on the upper s berant transverse knots hair is harsh; and the with a beard. The fem the male, with smaller h much less boldly knotte usually resort to the most of lofty mountains, whe small flocks, sometimes fifteen individuals. Th swift, and display amazi terity in leaping. They chase, but the danger att suit of them is great in are strength, address, and to the hunter when follo one precipice to another, among difficult passes; pressed, he will sometim suer with impetuous rapi down the most frightful legs being considerably hinder, enables these ani more facility than to de when pursued, they alwa the summits of the moun for hunting them is durin tember, when they are u dition. The voice of th short whistle, not unlike but of shorter duration especially when irritated, ling noise. The female than one young one at pays great attention, courage and obstinacy.

The CAUCASIAN IBEX considerably larger than and in form bears consid to the animals of the cer habits the loftiest rocky Caucasus. Its general co gray above, and white be is nearly black; and a b tinued down the back; t very large, and bend f smooth, black, sharply ri and hollowed on their ex no appearance of either h are about three feet long, about a foot apart in the or nine inches at the tips. large brownish beard: the horns nor beard.

One of the handsomest the JEMLAH IBEX, an Himalaya Mountains. formed, full of vigour, an

d; and its horns are remarkably at the base. It lives solitarily or in erds; and though bold and pugna- is easily tamed.

A genus of birds which in their habits and conformation closely ap- he Storks; they chiefly inhabit warm s, but, except in very cold regions,

IBIS.—(IBIS RELIGIOSA.)

to be found in all parts of the world. characters:—beak arched, long, hick at the base, and quadrangular, at the tip, which is obtuse; nostrils xtending from the root to the tip of , and dividing it into three portions, the upper is the broadest, and flat- ead and throat bare; legs long, and , the front webbed at their base as first joint, the hind toe very long, ded with claws. They frequent the f rivers and lakes, feeding on insects, mollusca, and occasionally on vege- tter. They perform powerful and flights, extending their neck and uttering a hoarse croak.

LOSSY IBIS (*Ibis falcinellus*) is nearly in length. In the adult bird, the east, top of the back, and all the parts of the body, are of a bright red ; the wing-coverts, quills, tail-fea- d the rest of the back, of a dusky ssed with bronze and purple; but much in its plumage at different ages. ies builds in Asia, and is found on ms and lakes, in flocks of thirty or They migrate perodically to Egypt; eir passage they are numerous in Hungary, Turkey, and the Grecian ago. They occasionally visit the the Danube, Switzerland, and, more ngland and Holland.

HITE IBIS (*Ibis religiosa*) arrives in bout the time that the inundation Nile commences, its *numbers in- or diminishing with the increase or* diminution of the waters: and it migrates about the end of June, at which time it is first noticed in Ethiopia. This species does not collect in large flights, more than eight or ten seldom being seen together. They

SKELETON OF WHITE IBIS.

are about the size of a fowl; the head and neck bare; the body white; the primaries of the wings tipped with shining, ashy black, among which the white forms oblique notches; the secondaries bright black, glossed with green and violet; the quill feathers of the tail white. This and the above described were the two species of birds adored by the ancient Egyptians, who used to rear them in their temples, and after death embalm them. Their mummies are found to this day in numbers, in the vast catacombs of ancient Memphis.

IBIS, AS REPRESENTED ON EGYPTIAN MONU- MENTS, WITH SECTION OF ITS SKULL.

"This," says Cuvier, "is the most celebrated species: it was reared in the temples of ancient Egypt, with veneration which approached to worship; and it was embalmed after its death, as some said, because it devoured the serpents which would otherwise have become dangerous to the country: according to others, because there was a resemblance between its plumage and some of the phases of the moon: finally, according to other some, because its advent announced the rising of the Nile. For a long time it was thought that this Ibis of the Egyptians was the Tantalus of Africa: we now know it belongs to the genus of which we are treating. It is as large as a hen, with white plumage, except the end of the wing-feathers, which is black; the last coverts have their barbs elongated, loose, black, with violet reflections, and thus covering the end of the wings and tail. The bill and the feet are black, as well as all the naked part of the head and neck: this part is covered in youth, at least on its upper surface, with small blackish feathers. The species is found throughout the extent of Africa."

The SCARLET IBIS (*Ibis rubra*) is a very splendid bird, and is found in the hottest parts of America in large flocks. They fly rapidly, but rarely, except at morning and evening, in search of food. The plumage is scarlet; beak naked; part of the cheeks, legs, and feet, pale red. Before the Scarlet Ibis reaches its full age, its plumage varies considerably.—Other species are found in India, Madagascar, the Cape of Good Hope, and Mexico.

ICHNEUMON. (*Herpestes.*) An animal bearing a very close resemblance to the weasel tribe both in form and habits. From the snout to the root of the tail it is about eighteen inches long; it has a long, agile body, short limbs, semi-plantigrade feet, small glowing eyes, and a pointed nose. It glides towards its prey with a snake-like movement, and then darts suddenly upon it. These animals feed upon birds, reptiles,

ICHNEUMON.—(HERPESTES ICHNEUMON.)

rats, mice, &c. Their disposition is as sanguinary as their habits are predatory; but though the destruction they cause among the poultry is very annoying, it is well compensated by the incessant war they wage against reptiles, the eggs of which they devour with the greatest avidity. The most celebrated species inhabits Egypt and the adjacent countries, where it is called "Pharaoh's rat." It is larger than a cat, but formed like a weasel; it is of a gray colour, and has a long tail, terminated by a black tuft. This species was ranked by the ancient Egyptians among their numerous divinities on account, it is supposed, of the benefits it confers on man by the destruction of crocodiles, whose eggs it digs out of the sand, and sucks. It is also a natural enemy of the whole serpent race, and so exceedingly expert in seizing them by the neck, as to avoid any injury to itself. The Ichneumon is easily domesticated, seeming to form an attachment to its place of residence; and it is not unfrequently kept tame both in India and Egypt, for the purpose of clearing the houses of mice and rats. Ichneumons are sometimes seen to squat on their haunches, and feed themselves with their fore paws, like the squirrel. When they sleep, they bring their head and tail under their belly, and appear like a round ball. In a wild state they generally reside along the banks of rivers; and they swim and dive like the otter, being able to continue under water for a great length of time.

ICHNEUMONIDÆ, *or* ICHNEUMON-FLIES. A family of hymenopterous insects, the genera and species of which are very numerous, and their manners extremely diversified, but all agreeing in this characteristic—that they deposit their eggs in the bodies of other living insects, and generally in those of caterpillars. The

ICHNEUMON.—(PIMPLA PRÆCATORIUS.)

females have a sharp and strong abdominal tube, or ovipositor, which is used to insert their eggs into the bodies of caterpillars that live beneath the bark, or in the crevices of wood; this is generally long, and capable of piercing almost any substance: while such as have a short ovipositor, place their eggs in or upon those caterpillars to which they have easy access. These eggs

he caterpillar; and, after a certain hey emerge in the state of complete ons. One of the most familiar ex- f this process is afforded by the r of the common white or cabbage , which in autumn may be fre- bserved to creep up some wall or venient surface, in order to under- n change into chrysalis; but in of a day or two a numerous tribe maggots will be seen to emerge d immediately proceed to envelope s in distinct yellow silken cases; forming a group around the cater- The perfect Ichneumons feed solely juices of flowers, and fly about with ble agility in search of their food, per situations for the deposition of

carnivorous insects are of various me are so small, that the Aphis, or se, serves as a cradle for their young; rain, from their size and strength, dable even to the spider, destroying h their powerful stings; some place gs within the aurelia of a nascent thers deposit them within the nest, e wasp has curiously contrived for g; and, as both are produced at the e, the offspring of the Ichneumon devour the young wasps, but the pply of larvæ which the parent had provided for their support. The wn, and perhaps the most formida- le genus, is the common Ichneumon r wings like the bee; a long slender dy; and a three-forked tail, con- f bristles, of which the two exterior , and the central one is red. But read that "probably more than ies exist in Europe alone, and the peculiar to other parts of the globe y be reckoned as at least equal," seem to be of little use to attempt

was observed on a tree 200 feet high and 41 feet round, where it probably had its nest for several years.

ICHTHYOSAURUS, or FISH-LIZARD. A genus of extinct marine animals which combined the characters of saurian reptiles and fishes, with some peculiar to cetaceous mammalia. This extraordinary creature, whose fossil remains discover its anatomical conformation, has been the subject of much learned investigation; and the anatomy and animal economy of it are in a manner established. Some of the largest exceeded thirty feet in length; and, from their structure, it is easy to conceive that they must have been very formidable enemies to the other inhabitants of the deep. The spinal column was formed like that of a fish, the vertebræ

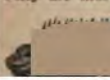
ICHTHYOSAURUS COMMUNIS.

being concave on both surfaces, and the arches which enclosed the spinal chord always remained distinct from the bodies as in reptiles; hence the body must have had great flexibility; but the progression of these animals through the water was chiefly by means of the anterior and posterior extremities (of which there were four), formed very much upon the plan of the feet or paddles of the whale. The general form of the head was not unlike that of the porpoise;

with the allied Plesiosauri forms quite a feature in the room devoted to their exhibition.

ICTERIA, or CHATTERING FLY-CATCHER. (*Icteria virilis.*) This bird abounds in most parts of North America during the summer months, and is remarkable both for its colouring and its habits. It is about six inches in length: nearly the whole of the upper parts of its body are of a rich deep olive green, the tips of the wings excepted, which are of a dusky brown: the throat, breast, and sides of the body are of a bright yellow; the belly and vent white; the forehead pale ash; from the nostrils a line of white extends to the upper part of the eyes, which it nearly surrounds; another white spot is situated at the base of the under mandible: beak strong and black; legs and feet pale blue. It has the faculty of mimicking almost any noise that it hears, which it will repeat during the whole night if the weather be fine. Its favourite residence is in close hazel or bramble thickets, and its nest is composed of dry leaves with layers of grape vine bark, lined with fibrous roots and dry grass. The female lays four flesh-coloured eggs, sprinkled with brown and dull red spots.

IGUANA. A genus of Reptiles of which there are several species: the genus including several of large dimensions, common in the tropical parts of America, some of which feed on vegetable substances, and are esteemed delicious food; while there are others which appear to be omnivorous. They are thus characterized by Cuvier:



ish-green; in general, on the sides body are brown stripes or zigzags edge yellow; and the tail is surrounded large brown or yellow rings. The Co Iguanas (*Iguana tuberculata*) are sought, especially in the spring, bei teemed a great delicacy. They are by means of a noose attached to the a stick: for the animal, though form in appearance, is timid and defenceles is very active; but when it has taken in a tree, it appears to depend on the rity of its situation, and never offers unless roused; hence it is easily The female deposits her eggs, whic about the size of a pigeon's egg, in the where they are left to be hatched genial warmth of the sun.

IGUANIDÆ. The family of Sau or lizard-like reptiles, of which the just described is the type, and of which are several sub-genera: descriptions of are given in Mr. Gray's elaborate wor Catalogue of Lizards in the British Mu [See LIZARD.]

IGUANODON. The name given extinct gigantic reptile, closely reser the Iguana in osseous structure, whe mains were discovered by Dr. Mant the wealden formation of the Sou England, in the localities of Purbec Isle of Wight, and Maidstone. Fro dentition there seems to be no doub it was herbivorous; the form of the considered with relation to the des made by the habits of the animal, beli adapted for cropping tough vegetable such as the *Cluthraria* and similar which are found buried with the Iguan From the proportions which the bo the Iguanodon bear to those of the Ig this extinct monster is calculated to been 70 feet in length from the snout

INCA. A genus of Lamellicorn Beetles, by many authors placed among the Goliath beetles, but whose situation in the system, according to more modern views, is nearer Trichius. They are natives of South America. The species figured here is *Inca Weberi*. It is of a violet black; the thorax edged with white; three-banded, the outer bands connected with the white edge of the thorax: the elytra have a reddish tinge, spotted with small pellish marks. It is a native of South America; and the accompanying figure will show its form and appearance. [See GOLIATH.]

WEBER'S INCA BEETLE.—(INCA WEBERI.)

INDICATOR. [See HONEY-GUIDE.]

INDRI. The name of a quadruped belonging to the family *Lemuridæ*. It is a native of Madagascar, and from its fine long hair is called *Indris laniger*.

INFERBRANCHIATA. An order of molluscous animals (Gasteropods), characterised by the position of the gills, which are situated beneath the produced margin of the mantle. They are incapable of swimming, and are therefore confined to the seashore, where they subsist upon sea-weeds and other aquatic plants.

INFUSORIA. A term applied by naturalists to the numerous minute animals found in water, which are commonly called animalcules. Had the microscope never been invented, the existence of myriads of living creatures whose forms and properties are now in some measure revealed to us, would have been wholly unknown. Ehrenberg, who by means of a most powerful microscope, was enabled to describe species which are not larger than from one-thousandth to two-thousandth of a line in diameter, infers, that a single drop of water may hold 500 millions of these animalcules. By what arithmetical power, then, shall the numbers that swarm in every stagnant pool or lake be calculated? "All true Infusoria," says he, "even the smallest monads, are organised animal bodies (*some consisting of* a homogeneous jelly), and distinctly provided with at least a mouth and internal nutritive apparatus." They are found equally abundant as fossils. The Norwegian earth, called *Bergmehl*, or Mountain meal, is principally composed of fossil animalcules. Professor Bailey tells us that the town of Charleston, in the United States, is built upon a bed of animalcules several hundred feet in thickness, every cubic inch of which is filled with myriads of perfectly preserved microscopic shells. He says also, that these *polythalamia*, or many-chambered shells, to whose labour South Carolina owes so large a portion of her territory, are still at work, in countless thousands, upon her coasts, filling up harbours, forming shoals, and depositing their shells to record the present state of the sea-shore, as their predecessors, now entombed beneath Charleston, have done with regard to ancient oceans. The most highly organized Infusoria are called by Cuvier *Rotifera* [which see].

The immense importance of the Infusoria in the scale of animal existence is chiefly seen by those who visit the Arctic and Antarctic seas. Although remotely supporting the higher animals, yet the want of them would be materially felt. This is well stated by Capt. Sir James Clark Ross, who, in speaking of a small fish found by him in the South Seas, and described by Dr. Sir John Richardson, under the name of *Notothenia phoca*, says, "They occupy the place of the *Merlangus polaris* and *Ophidium Parryii*, of the Arctic seas, the latter of which they much resemble; like them, they conceal themselves from the persecutions of their enemies in the small cracks and cavities of the pack ice, and may be seen when driven from shelter by the ships striking and passing over their protecting pieces of ice. The seals and petrels are their chief enemies, whilst they, in their turn, live upon the smaller *Cancri* and *Limacinæ*. Thus we behold in these regions, where the vegetable kingdom, which constitutes the support of animal life in milder climates, has no representative, a chain of animal existences, maintained by each preying upon that next below it in the order of created beings, and all eventually nourished and sustained by the minute infusorial animalculæ which we found filling the ocean with an inconceivable multitude of the minutest forms of organic life."—*Antarctic Voyage*, vol. ii. p. 161.

INSECTS. (*Insecta*.) A class of invertebrate animals, to which the term *insecta* has been applied, in reference to the insected, or divided, appearance of the body, which is not only composed of a continuous series of segments, articulating with each other, but is also often divided or cut into three very marked portions, to which the names *head*, *thorax*, and *abdomen* have been applied. There is no class of the animal kingdom which has been the subject of more numerous and various attempts at classification than that of Insects; nor is it at surprising; since it is pre-eminent in regard to the number of distinct species which it includes, and unsurpassed by any, save

the great and smaller divisions of the animal kingdom. Hence it will appear, that in this class of animals there are numerous distinctions, and that no general description will serve for all: so various are the appetites, manners, and modes of propagation, that every species requires its distinct history. Though so far inferior in point of magnitude, Insects, it must be confessed, surpass in variety of structure and singularity of appearance all the larger branches of the animal world. The general characters by which they are distinguished from other animals are these:—First, they are furnished with several feet: secondly, the muscles are affixed to the internal surface of the skin, which, though hard, sometimes preserves a certain degree of flexibility: thirdly, they breathe, not like the generality of larger animals, by lungs or gills, but by spiracles or breathing holes, distributed in a series or row on each side the whole length of the abdomen, and communicating with two long air-pipes within their bodies, and a number of smaller ones, to carry the air to every part. The head is furnished with a pair of *antennæ*, or horns, which are extremely various in the different tribes, and which, by their differences of structure, form a leading character in the institution of the genera into which Insects are distributed.

Insects have a very small brain, and instead of a spinal marrow, a kind of knotted cord, extending from the brain to the hinder extremity; and numerous small whitish threads, which are the nerves, spread from the brain and knots, in various directions. The heart is a long tube, lying under the skin of the back, having little holes on each side for the admission of the juices of the body, which are prevented from escaping again by valves or clappers, formed to close the holes within. Moreover, this tubular heart is divided into several chambers, by

that influence which renders it fit
nourish the frame and maintain life.

The first state in which the gener
Insects appear is that of an egg; son
however, are viviparous. From the
hatched the Insect in its Larva sta
Larvæ or Caterpillars of Insects d
materially from each other, according
different tribes to which they belong.
are some Insects, however, which u
no change of shape, but are hatched fr
egg complete in all their parts, and u
no farther alteration than that of
their skin from time to time, till at
they acquire the complete resemblan
the parent animal.

Most insects, in the course of thei
are subject to very great changes of
attended by equally remarkable cha
their habits and propensities. These c
transformations, or *metamorphoses*, a
are called, might cause the same ins
different ages, to be mistaken for as
different animals. For example, a
pillar, after feeding upon leaves till it
grown, retires into some place of c
ment, casts off its caterpillar-skin, an
sents itself in an entirely different for
wherein it has neither the power of
about, nor of taking food; in fact, in
second or chrysalis state, the insect s
be a lifeless oblong oval or conical
without a distinct head, or movable
after resting awhile, an inward st
begins, the chrysalis-skin bursts ope
from the rent issues a butterfly, or a
whose small and flabby wings soon
and harden, and become fitted to bea
the insect in search of the honeyed j
flowers and other liquids that suffice
nourishment.

In the different tribes of Insects th
or Chrysalis differs almost as much
Larva. In most of the Beetle tribe it

form is more or less masked or con-
. This name is not only applied to
caterpillars, and maggots, and to other
that undergo a complete transforma-
on also to young and wingless grass-
s, and bugs, and indeed to all young
before the wings begin to appear.
first period, which is generally much
most, insects are always wingless, pass
their time in eating, grow rapidly,
sually cast off their skins repeatedly.
ond period, wherein those Insects that
go a partial transformation, retain their
y and their appetites for food, continue
, and acquire the rudiments of wings,
others, at this age, entirely lose their
rms, take no food, and remain at rest
deathlike sleep,—is called the *pupa*
from a slight resemblance that some of
ider present to an infant trussed in
ges, as was the fashion among the
ns. The pupæ from caterpillars, how-
are more commonly called *chrysalids*,
e some of them, as the name implies,
t or adorned with golden spots; and
after their first transformation, are
named *nymphs*; the reason for which
very obvious. At the end of the second
Insects again shed their skins, and
forth fully grown, and (with few ex-
ns) provided with wings. They thus
upon their last or adult state, wherein
no longer increase in size, and during
they provide for a continuation of their
This period usually lasts only a short
for most Insects die immediately after
eggs are laid. Bees, wasps, and ants,
ur, which live in society, and labour
r for the common good of their com-
ies, continue much longer in the adult

ts possess some particular parts which
e to be found in any of the larger
s: among these are the *antennæ* before

part peculiar to Insects consists in a pair or two of short jointed processes proceeding from the mouth: these are termed *palpi*, or feelers, which in some Insects are very conspicuous, but not in all. The mouth in Insects is generally situated at the lower part of the front, and varies much in structure in the different orders. In some it is furnished with very strong jaws, often notched or serrated on the inner side into the appearance of teeth, and which always meet horizontally; in others the mouth consists of a tube or instrument for suction, either simple, or guarded by various kinds of appendages. The eyes in Insects are commonly situated on each side of the head, and are two in number; but in some Insects, as in Spiders, there are six or eight. In most of the Insect tribes the eyes may be considered as compound, the cornea presenting when viewed with a microscope the appearance of an infinite number of separate convexities, like so many real convex lenses. There are also on the heads of many Insects three small, smooth, lucid globules resembling so many separate eyes, placed on the top of the head, between or above the lateral ones: these Linnæus distinguishes by the title of *stemmata*; they are also called *ocelli*. The body in the major part of Insects is divided into the thorax or upper part, and the abdomen or lower part. In many of the Beetle tribe the back of the thorax is distinguished by a small triangular piece or division, situated at its lower part, between the juncture of the wing-sheaths: this triangular part is called *scutellum*, or the escutcheon. The under part of the thorax is called the breast, or *pectus*, and in this the sternum is frequently distinguishable. The abdomen is marked into transverse sections, and the last joint terminates in the tail. The wing-sheaths or shelly coverings, in the Beetle tribe and some others, are termed *elytra*.—The

their backs a microcosm, by the rugged and various elevations and depressions of their tuberculated crust, present to the eye of the beholder no exact imitation of the unequal surface of the earth, now horrid with misshapen rocks, ridges, and precipices — now swelling into hills and mountains, and now sinking into valleys, glens, and caves; while not a few are covered with branching spines, which fancy may form into a forest of trees. . . . The sight indeed of a well-stored cabinet of Insects will bring before every beholder not conversant with them, forms in endless variety, which before he would not have thought it possible could exist in nature, resembling nothing that the other departments of the animal kingdom exhibit, and exceeding even the wildest fictions of the most fertile imagination."

Before we close this article, we beg leave to quote from Mr. Newman's work on "The History of Insects," the following brief but admirable summary: — "The *senses of insects* are, properly speaking, seven: love, touch, taste, smell, hearing, sight, and the commanding and governing sense, called volition, mind, thought, or instinct. *Love* is that sense which ensures obedience to the great command, 'Increase and multiply:' its gratification seems the great object of an insect's life, after having arrived at maturity: its seat is in the organs of generation. *Touch* is a most invaluable sense to insects; they have two antennæ and four feelers attached to the mouth, which appear provided purposely for the exercise of this sense: the *tarsi* are also employed to ascertain qualities by touch; but the other parts of the body appear insensible to feeling, either as regards the ascertaining of qualities or the sensation of pain. *Taste* is undoubtedly possessed by insects in an eminent degree; and they seem to have the same preferences for animal or vegetable food

denotes, they subsist principally on
worms, &c. In general they lead
turnal and subterranean life; and
countries most of them pass the win
torpid state. Their legs are short,
running they place the entire sole
foot upon the ground. There is gr
riety in the front teeth of the anim
longing to this Order; in some the
teeth are longer than the incisors, w
others the canines are very small or
wanting. The Order is naturally
into those with simple fore legs, an
in which the fore legs are peculiarl
for digging. The first division co
the Hedgehogs, the Tenrecs or Mad
Hedgehogs (which have the muse
long, and have not the power of
themselves into a ball), the Shrews,
Desmans (*Sorex moschatus*), a curio
of aquatic animals, with webbed fe
the nose so much prolonged as to ho
a proboscis. The second division co
the Moles, the Shining or Cape Mo
only quadrupeds whose fur has a
gloss), the Radiated Moles, and the
or Shrew Mole of the United State
Mole: Hedgehog: Shrew, &c.

INSESSORES. The name given
Vigors to a most extensive order of
Birds; in which are comprehended
tribes which live habitually among
with the exception of the birds of p
the climbing birds. In all the true
sorial Birds, the toes are three bef
one behind. The adaptation of the
this order to grasping or perching is
from the situation of the hinder toe;
is invariably placed on the same lev
those in front; and by which they
tinguished from the Gallinaceous
Wading Birds. The toes are slende
ible, and of moderate length, wit
slender, and slightly curved claws;

t of which are omnivorous, re exclusively granivorous, or tooth-billed birds; which ed by a tooth or notch near f the upper mandible: these , small birds, &c. 3. *Tenui-* ter-billed birds: these have a ill, adapted for sucking up , &c.; and to this group be- whose principal food consists *Fimicrostres*, or gaping-billed the beak is very much flat- to afford them greater facility sects when on the wing, as is llow and others of that kind.

ALIA. The name given to ate animals, or worms, which inhabit the intestinal canal. n divided into five orders; toides (Round-worms); 2. (Hooked-worms); 3. *Tre-* -worms); 4. *Cestoidea* (Tape- *tica* (Hydatids).

A genus of Conchifera, con- cies only, the *Iridina exotica*, in the Nile, and in many warm climates. The shell is inequilateral; teeth very errous; inside very iridescent ast; ligament external; the enulated in its whole length. e natives of Egypt as spoons l, butter, and different kinds

. A genus of Conchifera, the re remarkable for the beauti- f the diverging umbones.

. The name of an order of ea, many of which are para- r animals, very frequently stacea.

ULUS. The *Julidæ* are a apoda, very nearly allied to (*Scolopendræ*); but their f being flattened, as in that y cylindrical. Each of the ents of the body is furnished of feet or legs, which are r strong enough to support that the animal, instead of alk, seems to have a sort of lion, like a serpent or worm. ssives up in a spiral form; as of the rings of the body resist considerable pressure. Iulidæ are composed of nu-

IPEDE.—(JULUS MAXIMUS.)

mal convexities, as in the the insect tribes; and the es that of the larvæ of many g furnished with a pair of ws; by means of which they divide with facility the per- g vegetable matter on which they usually feed. Some are found under stones, others in the earth, and some inhabit nuts. The most common species is the *Julus sabulosus*, about an inch and a quarter in length: its colour is a polished brownish black, with whitish legs: it is oviparous, and the young, when first hatched, have only three pair of legs, which are situated near the head; the remainder being gradually acquired till the number is complete, which usually amounts to a hundred and twenty on each side. In its young or growing state, it is of a pale colour, with a dark red spot on each side of every segment; and in this state it may sometimes be found in the soft mould of hollow trees.—The largest species known is the *Julus Indus*, or *Julus maximus*, which in its conformation resembles the species above described, but is from six to seven inches long. This is found in South America and the warmer parts of Asia, inhabiting woods and other retired places. The *Julidæ* have no poisonous organs, and are perfectly innoxious to man: indeed, by their consuming vegetable substances that are in a state of decomposition, they may be considered beneficial. Mr. Newport, F.R.S., has made them and the Scolopendridæ a special object of study, and has published the results in the Linnæan Transactions. In the British Museum there is a very extensive collection of these interesting Myriapoda. [See CHILOGNATHA.]

JABIRU. A large aquatic bird, allied to the stork, three species of which are known, respectively inhabiting America, Western Africa, and Australasia. It is the *Mycteria* of Linnæus. It is somewhat larger than the swan; the head is large; the neck thick;

SENEGAL JABIRU.
(MYCTERIA SENEGALENSIS.)

and the bill is long, conical, smooth, and pointed. The body is entirely white; the head and neck are very bare of feathers, and covered with a thick black skin; and the tail is broad and short: the legs, which are more than two feet long, are thick and scaly; and the bill and feet are black. Our figure represents a gigantic species from the west coast of Africa, the Mycteria Senegalensis, on the shore of which it must form a striking featnre. In the enormous size of the beak this species resembles the Adjutant of India, and like that bird, we suppose this species to be somewhat of a carrion eater.

JACAMAR. (*Galbula.*) The birds belonging to this genus, of which there are but a few known species, are very much allied to the Kingfishers, except that their feet are quite different, and they inhabit moist woods; whereas the Kingfishers are only found on or near the banks of rivers. Their plumage has a metallic lustre, which it is extremely difficult to imitate.

The GREEN JACAMAR (*Galbula viridis*) is a splendid bird, about the size of a lark; its prevailing colour on the upper parts of the body being a most brilliant, changeable green, glossed with copper and gold. The beak is about two inches in length, black, slightly incurved, and sharp-pointed: the legs, which are short and weak, are a greenish yellow; and the claws black. Its breast and belly are of a dusky yellow hue, and the chin white. The tail is wedge-shaped; the two middle feathers very long, and the outer ones much shorter. The habits of this

GREEN JACAMAR.—(GALBULA VIRIDIS.)

bird are very solitary: it resorts to the thickest parts of the woods, where it can obtain plenty of insects, and is seldom seen in company with another. Its flight is short and quick; and it is said to have an agreeable note.

The PARADISE JACAMAR (*Galbula paradisea*) is a less solitary bird than the others of this genus; being found in pairs, and frequenting the more open parts of the woods. It is nearly a foot in length: beak two and a half inches long, black, pointed, square, and compressed on the sides: head of a dull violet green; throat, fore part of the neck, and under wing-coverts white; the rest of the plumage green, varying in shades and glosses according to the lights in which it is viewed; the two middle tail-feathers six inches long, and the outer one only an inch: *legs black*. Native of Surinam and Cayenne.

JACANA. A genus of wading birds, distinguished by the extraordinary length of their toes and their spine-like claws, especially that of the hinder toe. They are very light birds; and the wide surface over which their toes extend, enables them the more easily to procure their food, consisting of worms, small fishes, and insects, by walking on the leaves of aquatic plants which float on the water. Various species of the Jacana, which in contour and habit resemble our moor-hen, are spread over the tropical regions both of the Old and New World.

The COMMON JACANA (*Parra Jacana*) is about ten inches long, the beak being upwards of one inch, and orange-coloured: the head, throat, neck, breast, and under parts are black: the back, wing-coverts, and scapulars bright chestnut: spur on the wing yellow, and the bend of the wing varied with black: the quills olive-yellow, tipped and partly edged with dusky: tail rounded, chestnut tipped with black: legs greenish ash. These birds inhabit Brazil, Surinam, and other parts of South America and the West Indies: they are very shy and noisy, and their note is very shrill.

The INDIAN JACANA (*Parra Indica*) is a shy bird, frequenting stagnant lakes, and building its nest upon floating materials, among weeds, near the banks. It has a yellow beak, with the base of its upper mandible dusky blue; and near the gape a red spot: over the eye is a white streak, which reaches some distance down the side of the neck: the head, neck, and upper parts of the body are deep blue-black: the back and wings are ashy-brown: legs dirty yellowish-brown.

The BRONZED JACANA (*Parra ænea*) is a highly elegant species inhabiting Brazil. The prevailing colour of the body is black, brilliantly glossed with blue and violet reflections: its head and neck are of a brilliant bronzed-green colour: behind the eye is a white streak: the quills are black: the wing-coverts dull yellow; and the rump and tail are blood-red.

JACCHUS, or MARMOZET. A genus of Monkeys, of a small size, with short smooth, flesh-coloured face, and round head. The five fingers are armed with claws, except the thumbs of the posterior extremities, which have nails: fur very soft; tail full and handsome. Length of body about eight inches; tail eleven. General colour olive-gray; head and shoulders nearly black; the tail and lower part of the back are annulated with pale gray; and two tufts of pale hair grow round the ears. They are squirrel-like in their habits, and omnivorous; feeding on roots, seeds, fruits, insects, snails, and young birds. Native of Guyana and Brazil.

JACK. [See PIKE.]

JACKAL. (*Canis aureus.*) This animal in its appearance somewhat resembles the fox, while its habits are more like those of the wolf. It is a native of India, Persia, and various other of the warmer parts of Asia, as also of Barbary, and the interior of South

out that of a fox, but
colour a light orange-
ay above, and whitish
s about the back: the

IS ACHROS.]

rather bushy, and ge-
tip: the ears are very
e pointed. The voice
ibed as peculiarly hi-
indistinct bark and a
es in woods, holes, and
reys indiscriminately
imals, committing ra-
in the poultry-yard,
ventures abroad till
equently go in great
y, and by their dread-
put to flight deer, an-
d quadrupeds; while
attending to the cla-
till the Jackals have
, and, having satiated
leaves only the scanty
hed hunters. Hence
popularly called "the
e say that the Jackal
ty to follow mankind,
n him, like the Wolf
t the whelp is readily
wn up, assumes all the
Dog: nay, it is well
l interbreeds with the
iod of gestation is the
progeny is fertile. We
rve, that between the
there exists such an
thy, that they never
s.

AW. (*Corvus mone-*
English bird, consi-
e Rook, being about
gth, and twenty-eight
and legs are black;
hooked; eyes white;
head and neck is sil-
f the plumage is of a
above, beneath dusky.
church steeples, old
locks, where they build
e lays five or six eggs,
an those of the crow.
, and may be taught,
to imitate human ar-
also the mischievous
hiding money, spoons,
d metallic substances.
rain, fruit, small pieces
y remain in this coun-
year; but in France,
parts of the Continent,
rom an article, headed
w," in Mr. Waterton's
Essays, we glean the following observations: "Though the Jackdaw makes use of the same kind of materials for building as those which are found in the nest of the rook; though it is, to all appearance, quite as hardy a bird; and though it passes the night, exposed to the chilling cold and rains of winter, on the leafless branches of the lofty elm; still, when the period for incubation arrives, it bids farewell to those exposed heights, where the rook remains to hatch its young, and betakes itself to the shelter which is afforded in the holes of steeples, towers, and trees. Perhaps there is no instance in the annals of ornithology which tells of the Jackdaw ever building its nest in the open air. Wishing to try whether these two congeners could not be induced to continue the year throughout in that bond of society which, I had observed, was only broken during incubation, I made a commodious cavity in an aged elm, just at the place where it had lost a mighty limb, some forty years ago, in a tremendous gale of wind which laid prostrate some of the finest trees in this part of Yorkshire. At the approach of breeding-time, a pair of Jackdaws took possession of it, and reared their young in shelter; while the rooks performed a similar duty on the top of the same tree, exposed to all the rigours of an English spring. This success induced me to appropriate other conveniences for the incubation of the Jackdaw; and I have now the satisfaction to see an uninterrupted fellowship exist, the year throughout, between the Jackdaw and the Rook."

JAGUAR, or OUNCE. (*Felis onca.*) A fierce and destructive animal of the feline kind, partaking of the qualities and habits of the Tiger: it is a native of the hotter parts of South America, and from its being the most formidable quadruped there, is sometimes called the tiger or panther of the New World. It is as large as a wolf, and lives solely on prey. Its ground colour is a pale brownish yellow, variegated on the upper parts of the

JAGUAR.—(FELIS ONCA.)

body with streaks and irregular oblong spots of black; the top of the back being marked with long uninterrupted stripes, and the sides with rows of regular open marks: the thighs and legs are marked with full black spots; the breast and belly are whitish; the tail not so long as the body; the upper part irregularly marked with large black spots, the lower with smaller ones. It swims and climbs with ease; and preys not only on the larger domestic quadrupeds, and on smaller

that are wild, but also on birds, fish, tortoises, turtles' eggs, &c. It must, however, be very hard pressed before it will attack man.

JANTHINA. A Molluscous animal, belonging to the *Pectinibranchiata*. The shell has some resemblance to our land snails, but the aperture is angular at its lower part and at its outer side, where, however, the angle formed by the union of the upper and lower halves of the outer lip is much rounded in most of the species; the columella straight

PURPLE SEA SNAIL.—(JANTHINA COMMUNIS.)

and elongated, the inner lip turned back over it. The animal has no operculum, but carries under its foot a vesicular organ, like a congeries of foam-bubbles, of solid consistence, that prevents creeping, but serves as a buoy to support it at the surface of the water. The head is a cylindrical proboscis; and is terminated with a mouth cleft vertically, and armed with little curved spines: on each side of it is a forked tentaculum. The shells are of a violet colour; and when the animal is irritated it pours forth an excretion of deeper blue to tinge the sea around it.

"The method in which this animal fills its float," says Capt. Grey, "is curious: it throws it back, and gradually lifts the lip of the valve out of water, until the valve stands vertical; it then closes the valve tightly round a globule of air, around which it folds, by means of the most complex and delicate machinery. The valve is then bent over until it touches the edge of the float nearest the head, and when it is in this position, the portion of it which is inflated with air looks like a bladder, the air gradually is expelled into the float, and as this process takes place the bladder in the valve diminishes, and the valve becomes by degrees like a lip pushed forwards until it lies flat on the float: the valve is composed of two portions, a cup and a lip. The time occupied from first removing the valve from the float, until the inflation, and the expulsion of air into the float being completed, so that the valve begins to move again, is sixty-one seconds, from the mean of several experiments. These animals have also the power of compressing the valve into a hollow tube, which they elevate above the water like a funnel, and draw down air through it. The colouring matter which they emit has no stinging, electric, or deleterious properties whatever, that I could discover. I found that when this colouring matter was mixed with water, it became of a deep blue. In those which I caught in *Nov.* 1837, I may have been deceived, and the colouring matter might also have been scarlet directly it was It is difficult to conceive what use can be to the fish against its certainly uses it as a means of one of these shells, the fish in alive and well, we found attached of barnacles, some of which were size."—*Narrative of Expedition Australia.*

JAY. (*Garrulus glandarius.*) the most elegant bird of the Cor in Britain, and is about thirteen length. Its general colour is a ligh buff, paler on the under parts; black, with a large white spot in t its bill and tail are black; t notched on each side near the t latter rather rounded at the end thers on the forehead are white with black, and form a tuft wh erect or depress at pleasure; th wing-coverts are elegantly ba black, fine pale blue, and white al the lesser wing-coverts bay; the

JAY.—(GARRULUS GLANDARIUS.)

vent almost white: the greater black, with light edges; the bas of them white; lesser quills bla next the body chestnut; legs of a colour. The Jay is very comm country, and is found in most of perate parts of Europe, frequenti and feeding on acorns, beech-ma and fruits of various kinds, it sometimes young birds in the the old ones. The Jays are distin well for the beautiful arrangemen colours, as for their harsh, grating petulant, restless disposition. I ment, however, it loses the beauty mage, and becomes of a dull o tinge. When an owl or other bi appears in the woods, they ass cries, and assemble in great numb tack the common enemy: the s takes place when they see a sportsm they often frustrate by their noise. Like their kindred, the ma jackdaw, they can be taught a words and sounds, particularly harsh and grating character, as saw, &c. They sometimes assemb numbers in the spring, and seem conference, (as Bewick says) pr

pairing and of fixing upon
y are to occupy; and the
ese occasions may be aptly
t of a distant meeting of dis-
persons. The Jay builds in
es an artless nest, composed
and slender twigs; lays five
ray, mixed with green and
rith brown.

al of a Naturalist' we find,
ie love of offspring, as being
nifested in birds, the follow-
he Jay. "This bird is al-
timid and cautious, when its
safety is solely concerned;
es its hungry brood clamour
it loses all this wary cha-
omes a bold and impudent
riod it will visit our gardens,
approaches at other times,
every raspberry, cherry, or
obtain, and will not cease
ong as any of the brood or
s. We see all the nestlings
ettling near some meditated
, quietly await a summons
A parent bird from some
ground, then descends upon
nto the rows, immediately
covery by a low but parti-
all the family flock into the
having finished by repeated
ds return to the woods, with
ring children, and become
autious creatures they were

r. (*Garrulus cristatus.*) This
s a native of North America,
aller than the European Jay,
h longer in proportion: the
ely crested, with loose silky
ack; legs brown: the whole
e blue colour on the upper
wings and tail marked by
bars; neck encircled with a

(GARRULUS CRISTATUS.)

under parts blossom-colour,
ast of blue; tail tipped with
vet, and thighs of a dusky
te is less discordant than the European Jay; but its manners are very similar. It is said to be a great destroyer of maize or Indian corn, often assembling in large flocks to devour it.

Mr. Gosse, in his 'Canadian Naturalist,' thus speaks of this bird, in his observations made during the month of December. "The Blue Jay continues as numerous and as noisy as ever. His harsh screaming voice may be heard above that of all the other feathered inhabitants of our groves, all the year through. A beautiful bird he is, with his bright violet, white, and sky-blue coat, long tail, and pointed crest; and by his airs and grimaces he appears to have no mean idea of his own personal attractions, and probably he may think his voice as charming as his plumage, as he so continually gives us the benefit of his music. He appears to tyrannize over his brethren occasionally. I once saw, in the south, a Blue Jay in close and hot pursuit of a summer Red-bird (*Tanagra estiva*), and Wilson records a parallel incident. He has other notes, besides his common loud squall, some of which are difficult to recognize. In the clearing, the parties of these birds, for they are hardly numerous enough to be called flocks, generally fly high, and alight about the summits of lofty trees; but in the woods, particularly in spring, they as frequently choose a lower altitude. They are wary, and rather difficult of approach.

JELLY-FISH. Under the heads "Acalepha," "Beroe," and "Medusa," will be found various information applicable to the present article, the popular name of "Jelly-fishes" being very generally used (by the unscientific) to denote the different marine substances forming that branch of the class RADIATA which is comprised in the order *Acalepha*. Extreme delicacy of structure is common to the whole group; most of them have no hard support whatever, and the animals when removed from their natural element wholly lose their form; but there are a few species which have a very thin cartilaginous covering, and these retain a semblance of the animal as it appeared when alive. We find that in every climate the ocean swarms with infinite multitudes of animals, which, from their minuteness and transparency, would be almost imperceptible, were it not for the phosphorescent properties of some of them being rendered evident on the slightest agitation. All, however, are not equally minute: some grow to a large size, and their forms are perfectly well known to the casual observers of marine substances which lie on every beach. Most of these are highly phosphorescent; and in tropical regions, more particularly, where they exist in the greatest abundance, the path of a vessel is marked by a brilliant line of glowing light, and the whole surface of the ocean often displays a beautiful luminosity. Even on our own coasts a similar effect is very frequently observed, though the luminous appearance is vastly less brilliant.

In 'Patterson's Introduction to Zoology' we find the following practical observations: —"*Our admiration* for the various func-

tions performed by the *Acalephæ* is much increased when we reflect upon the extremely small quantity of solid matter which enters into their composition. This fact admits of easy illustration, both in the Beroes and in the Medusæ. On one occasion, we took a dead Cydippe, and placing it on a piece of glass, exposed it to the sun. As the moisture evaporated, the different parts appeared as if confusedly painted on the glass; and when it was become perfectly dry, a touch removed the only vestiges of what had been so lately a graceful and animated being. With regard to the Medusæ, we may mention an anecdote which we learned from an eminent zoologist, now a professor in one of the English universities [Prof. E. Forbes, we believe]. He had, a few years ago, been delivering some zoological lectures in a seaport town in Scotland, in the course of which he had reverted to some of the most remarkable points in the economy of the Acalephæ. After the lecture, a farmer who had been present came forward, and inquired if he had understood him correctly, as having stated that the Medusæ contained so little of solid material that they might be regarded as little else than a mass of animated seawater? On being answered in the affirmative, he remarked, that it would have saved him many a pound had he known that sooner, for he had been in the habit of employing his men and horses in carting away large quantities of jelly-fish from the shore, and using them as manure on his farm, and he now believed they could have been of little more real use than an equal weight of sea-water. Assuming that so much as one ton weight of Medusæ recently thrown on the beach had been carted away in one load, it will be found that, according to the experiments of Professor Owen, the entire quantity of solid material would be only about four pounds of avoirdupois weight, an amount of solid material which, if compressed, the farmer might, with ease, have carried home in one of his coat pockets."

JERBOA. (*Dipus.*) This singular genus of rodent quadrupeds may be considered as an intermediate link between the Squirrel and the Rat, but agreeing with the latter rather than the former; while the enormous development of its hind legs and tail cause it to bear considerable resemblance in form to the Kangaroo. One species is a native of of Egypt, Syria, &c.; and was known to the ancients under the name of *Dipus*, (two-footed), which is still its scientific appellation. The most common species is the *Dipus sagitta*. It is of a pale yellowish fawn colour on the upper parts, and white beneath; the length of the body is about eight inches, and of the tail ten, being terminated by a tuft of black hair, the tip of which is white, but the rest short and rough. The head is short; the ears thin, broad, upright, and rounded; the eyes large, round, and dark coloured; the fore legs about an inch long, with five toes to each foot, the inner toe very small, but furnished with a sharp, crooked claw, like the rest; the hind legs are extremely long, thin, sparingly covered with short hair, and very much resemble those of a bird: the hind feet have three toes on each, the middle of which is somewhat larger than the rest, and all are

JERBOA.—(DIPUS SAGITTA.)

furnished with sharp and strong claws: there is also a very small spur or back toe, with its corresponding claw. On each side the nose are several long hairs or whiskers; and the cutting teeth are sharp and strong, resembling those of a rat. In its attitudes and manner of progression this animal much resembles a bird; generally standing, like the Kangaroo, on its hind feet, and leaping with much celerity, and to a great distance. It principally uses the fore legs in feeding, putting to his mouth the ears of corn, and various other vegetable substances on which it feeds.

The Jerboas inhabit dry, hard, and clayey ground, in which they make their burrows. These are of considerable length, and run obliquely and winding; at about half a yard below the surface of the ground, they terminate in large excavations or nests; they are usually provided but with one opening, though the animals are provident enough to make another passage, to within a short distance from the surface, through which they rapidly penetrate in case of necessity. They keep within their holes during the day, sleeping rolled up, with their head between their thighs: at sunset they come out, and remain abroad till morning. From the rapidity with which they take their leaps (of six or seven feet at a time), it is nearly impossible to overtake them. In leaping, they carry their tails stretched out; but in standing or walking, they carry them in a curved form, the lower curve touching the ground. In their wild state these animals are very fond of bulbous roots; but, when confined, they will feed on raw meat. They are tamed without much difficulty, but require to be kept warm.

There are some other species of the *Jerboa*; by far the largest of which is the CAPE JERBOA, a native of the mountainous country to the north of the Cape of Good Hope. Its length from the nose to the tail is fourteen inches, and the tail itself somewhat more. The head is broad, the muzzle sharp, and the upper jaw longer than the lower; the ears are large, the whiskers long and black, and the tail is extremely full of hair. It is an animal of great strength and activity, and will spring to the distance of twenty or thirty feet at once. When eating, it sits up-

r of a squirrel; and it
d, like the smaller kind
st ease and expedition;
ong and long claws on
: those on its hind feet
in number. [See Ha-

See Falcon.]

ULTURE. The local
r the Turkey Buzzard.
ED.]

See Dory.]

ular genus of Coleoptera
ily *Cetoniidæ*, one spe-
cribed by Mr. W. W.
ery rare in collections;
ri; it is of a brilliant
low marks on the elytra,
long fore legs. It is a
India.

E. [See Helamys.]

. (*Megapodius tumulus.*)
le work on the "Birds of
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se is about that of a com-
not be confounded with
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earn, "is almost exclu-
the dense thickets im-
to the sea-beach: it ap-
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It is always met with
litary, and feeds on the
isting of roots which its
le it to scratch up with
and also of seeds, berries,
larly the larger species
at all times a very dif-
ure; for although the
nced by its stiff pinions
e frequently heard, the
to be seen. Its flight is
ed in the extreme; when
variably flies to a tree,
etches out its head and
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sition as stationary and
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rever, it becomes fairly
horizontal but laborious
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es if broken. I did not
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d and crest of this bird
namon brown; back of
under surface very dark
ings cinnamon brown;
ll coverts dark chestnut
sh brown; bill reddish
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ppears that on Mr. Gil-
s Eddington his attention
marrous great mounds of
earth which were pointed out to him by some of the residents as being the tumuli of the aborigines. The natives, on the other hand, assured him that they were formed by the Jungle-fowl for the purpose of hatching its eggs: and so it afterwards proved. One of these mounds is described as fifteen feet high, and sixty in circumference at the base, and so enveloped in thickly foliaged trees as to preclude the possibility of the sun's rays reaching any part of it.

KAIIAU. The Proboscis Monkey. [See Monkeys.]

KAKAPO. A New Zealand parrot. [See Strigops.]

KALONG. The name given to several species of Fox-bats (*Pteropidæ*). [See Pteropus.]

KANGAROO. (*Macropus.*) This extraordinary animal is peculiar to Australasia, and belongs to the marsupial order of quadrupeds; but it receives its scientific name from the enormous length of the hind feet, which is the distinguishing characteristic in all the animals included in the family *Macropopidæ*, or Kangaroo tribe. But before we proceed to describe the form and habits of this singular quadruped, we shall mention the circumstances (as detailed by Dr. Shaw) attending its first discovery. This was in 1770, when the celebrated navigator Captain Cook was stationed for a short time on that part of the coast of New Holland which is now called New South Wales. On Friday, June 22, says Captain Cook, a party who were engaged in shooting pigeons for the use of the sick of the ship, saw an animal which they described to be as large as a greyhound, of a slender make, and extremely swift. The following day the same kind of animal was again seen by a great many other people. On the 24th it was seen by Captain Cook himself, who, walking at a little distance from the shore, observed a quadruped, which he thought bore some resemblance to a greyhound, and was of a light mouse-colour, with a long tail, and which he should have taken for a kind of wild dog, had not its extraordinary manner of leaping, instead of running, convinced him of the contrary. Mr. Banks also obtained a view of it, and immediately concluded it to be an animal perfectly new and undescribed. Some time after, this gentleman, accompanied by a small party, had an opportunity of chasing two with his greyhound, which the Kangaroo, by its bounding leaps over the high grass, soon outstripped. It was not long, however, before one was shot; and the scientific associates in this expedition of discovery were then fully gratified.

The upper parts of the Kangaroo are small, while the lower are remarkably large in proportion; yet its general appearance is decidedly picturesque. The head bears some resemblance to that of a deer, and the visage is mild and placid: the ears are moderately large, rather pointed, and upright; the eyes large, and the mouth rather small; the neck thin and finely proportioned; the

fore legs extremely short, with the feet divided into five toes, each furnished with a short and somewhat hooked claw; the hinder feet, on the contrary, are provided with only four toes, the middle one of which is long, of great strength, and terminated by a large and powerful hoof-like nail or claw: so that the head and upper parts seem strangely disproportioned to the posterior parts of the animal, which are robust and powerful. The tail, which is very long, is extremely thick at the base, gradually tapering, and appears to act as a supplemental limb, when the animal assumes its erect or sitting posture. When feeding, it is seen in a crouching position, resting on its fore paws, as well as on the hinder extremities, whilst it browses on the herbage; and in this attitude it hops gently along, deriving some assistance from its tail. On the least alarm, however, it raises itself on its hind legs, and bounds away to a distance with great rapidity. The leap is of very great length; and is accomplished by the muscular action of the tail, almost as much as by that of the limbs. They use their tails and hinder feet also as weapons of defence: for when pursued and overtaken by dogs, they turn, and seizing them with their fore feet, strike them with their hinder ones, sometimes causing death by a single blow. The under side of the hind foot has a callous sole along its whole length; and its great length is chiefly given by the elongation of the metatarsal bones. Kangaroos have no canine teeth: their incisors are six in the upper jaw, and but two in the lower; the former short, and the latter long: the molars, which are separated from the incisors by a large vacant space, are ten in number in each jaw. They are exclusively herbivorous in their diet, feeding chiefly on grass; and they associate in small herds, under the guidance of the older males. The ventral pouch, or receptacle for the young, with which the female Kangaroo is furnished, is indeed a most curious provision of nature. Being situated just below her breasts, there the young ones sit to suck; and even when they are old enough to leave the pouch, for exercise or amusement, they immediately seek refuge in it on the least alarm.

The number of species which are now known are very considerable: they vary in size, from that of a rat to the Great Kangaroo, the male of which has been known to measure nearly eight feet from the nose to the tip of the tail, and to weigh 220 lbs.; but in form and habits they bear a strong resemblance to each other. The young are produced in an extremely imperfect state, and are even disproportionately small; not exceeding an inch in length. These animals are easily tamed; and when in a state of domestication, they are harmless and timid. Their flesh is eaten in Australia, and is said to be nutritious. Some persons are loud in their commendations of it; Colonel Light, indeed, goes so far as to recommend all who are fond of ox-tail soup (and they are not a few), to take a trip to South Australia, and eat Kangaroo-tail soup; which, he says, if made with the skill that soups in England are, would as far surpass the ox as turtle does the French *potage*.

Mr. Gould's great work on the Kangaroo Family is a most noble contribution to Natural History: in it all the species are figured and described with the hand of a master. We must also refer to the work of Mr. Waterhouse, who has devoted a thick octavo volume to their history. Both these works are indispensable to those who would desire to study this important family.

KERMES. (*Coccus ilicis.*) An Insect produced in the excrescences of a small oak, the *Quercus coccifera*, and found in many parts of Asia and the South of Europe. The body of this Insect is full of reddish juice, and when dead, and transformed into an apparent grain or berry, it is used for the purpose of dyeing a brilliant red colour. They were long taken for the seeds of the tree on which they live, and hence called *grains of Kermes*. Kermes is now nearly superseded by the use of cochineal, but though much inferior in brilliancy to the scarlet cloths dyed with real Mexican cochineal, they retain the colour better, and are less liable to stain. This is said to have been the celebrated Phœnician dye. [See COCHINEAL.]

KESTREL. (*Falco Tinnunculus.*) A beautiful bird of the Hawk kind, known also as the Stannel Hawk, and Windhover. The male is about fourteen inches in length, and in breadth two feet three inches. Its colours, at first sight, distinguish it from all other hawks: the crown of the head, and the greater part of the tail, are of a fine light gray hue; and on the lower part of the latter there is a broad black bar, succeeded by white tips. The back and coverts of the wings bright cinnamon brown, spotted with black; quill feathers dusky, with light edges; inside of the wings white, beautifully spotted with brown on the under coverts, and barred on all the quills with pale ash. The whole under side of the bird is of a pale rust colour, streaked and spotted with black. The bill blue; cere and eyelids yellow; legs yellow; claws black. The colours of the female are less vivid than those of the male: the back and wing-coverts are rusty brown, and elegantly marked with numerous undulated bars of black; the breast, belly, and thighs are of a pale reddish buff, with dusky streaks pointing downwards; and the tail is marked by a pretty broad dark ash-coloured bar near the end.

The Kestrel is widely diffused throughout Europe, and is by no means rare in the more temperate parts of North America. It breeds in the hollows of decayed trees, and in the holes of rocks, towers, and ruined buildings; and lays four or five pale reddish eggs. It feeds on small birds, field mice, reptiles, and insects: after securing its prey, it plucks the feathers very dexterously from birds, but swallows mice entire, and discharges the hair, in the form of round balls, from its mouth. This bird, when in quest of food, "glides softly through the air, at a moder-

vale height, now poised in the breeze on flattering pinion, now resting in the void apparently without motion; till, at last, down he comes, like a falling stone, upon the unconscious prey below." That discerning friend of the feathered tribes, Mr. Waterton, whose words we have just quoted, thus apostrophizes in this bird's favour: "Did the nurseryman, the farmer, and the country gentleman, know the value of the Windhover's services, they would vie with each other in offering him a safe retreat. He may be said to live almost entirely on mice; and mice, you know, are not the friends of man: for they bring desolation to the bee-hive, destruction to the pea-bed, and spoliation to the corn-stack. Add to this, they are extremely injurious to the planter of trees." Again, "I prize the services of the Windhover Hawk, which are manifest by the quantity of mice he destroys; and I do all in my power to put this pretty bird on a good footing with the gamekeepers and sportsmen of our neighbourhood. Were this bird properly protected, it would repay our kindness with interest; and we should then have the Windhover by day, and the owls by night, to thin the swarms of mice which overrun the land." "The Windhover," he further observes, "is a social bird, and, unlike most other hawks, it seems fond of taking up its abode near the haunts of men. What heartfelt pleasure I often experience in watching the evolutions of this handsome little falcon! and with what content I see the crow and the magpie forming their own nests; as I know that, on the return of another spring, these very nests will afford shelter to the Windhover! Were I to allow the crow and the magpie to be persecuted, there would be no chance for the Windhover to rear its progeny here; for Nature has not taught this bird the art of making its nest in a tree. How astonishing, and how diversified, are the habits of birds! The Windhover is never known to make use of a nest until it has been abandoned for good and all by the rightful owner; whilst, on the contrary, the cuckoo lays her egg in one of which the original framer still retains possession."

KING-BIRD. A name given to the Tyrant Flycatcher. (*Muscicapa Tyrannus.*) [See TYRANT FLYCATCHER.]

KING-FISH. [See OPAH.]

KINGFISHER. (*Alcedo.*) A rather numerous genus of birds, and widely diffused in warm climates, although there is but one species occurring in Europe. They are, in general, birds of an inelegant shape, the head being large in proportion to the size of the body, and the legs and feet very small; but they are of singular brilliancy of plumage, in which blue, green, and orange are the prevailing colours. They are distinguished by having a long, straight, strong, and acute bill; wings rather short; body thick and compact; head large and elongated; plumage thick and glossy. In some of the larger species, however, the colours are more obscure, exhibiting a mixture of brown, black, and white, variously modified in the different birds. In their manners they all seem to agree; frequenting the banks of rivers, &c., where, perched on a branch of a tree, or other projecting object, they will remain motionless for hours, watching till some fish comes under its station, when the bird dives perpendicularly down into the water, and brings up its prey with its feet, carries it to land, kills it by repeated strokes of the bill, and immediately swallows it: afterwards casting up the scales and other indigestible parts, in pellets, like birds of prey.

The COMMON OR EUROPEAN KINGFISHER. (*Alcedo ispida.*) This retired and solitary bird, which is only to be found near rivers, brooks, or stagnant waters, subsisting entirely on the smaller kinds of fish, is only seven inches in length, and eleven in breadth: its bill is nearly two inches long, the upper mandible being black, and rather red at the base; the under one, as well as the inside of the mouth, orange-coloured; the throat is white: the crown of the head is a deep shining green, with numerous transverse bright blue streaks; the shoulders and whole wings dark green, but the edges of the quill feathers are glossed with pale blue, and the shoulders marked by numerous small blue spots. The middle of the back, the rump, and coverts of the tail are of a most resplendent azure: the tail is very short, and of a deep rich blue colour; and the whole under part of the body is of a bright orange: legs red; claws black. The female commonly deposits her eggs (which are from five to eight in number, and perfectly white) in a hole in the river's banks, which has probably been made by the mole or the water-rat. If the nest be robbed, the bird returns and lays in the same situation. "I have had," says Reaumur, "one of these females brought me, taken from her nest about three leagues from my house. After admiring the beauty of her colours, I permitted her to fly; when the fond creature was instantly seen to repair to the nest where she had just before been made a captive: there joining the male, she again began to lay, though it was for the third time, and the season was very far advanced. At each time she had seven eggs." In this country the Kingfisher begins to lay early in the season, and excludes her first brood about the beginning of April. The fidelity of the male exceeds that of the turtle: he brings the female large supplies of fish during the season of incubation; and she, contrary to most other birds, is always plump and fat at that time. The male, who on other occasions always makes a twittering noise, now enters the nest with all the silence and circumspection imaginable. The young are hatched at the expiration of twenty days; but they do not acquire the beauty of their plumage till after the first moulting season. This bird is usually seen flying rapidly near the surface of the stream; and the velocity with which it maintains its flight, considering the shortness of its wings, is really surprising.

The ancients attributed to the Kingfisher innumerable habits and properties equally

improbable. They supposed that it built its nest upon the ocean; but as this floating cradle would be likely to be destroyed by storms, they endowed the bird with powers to lull the raging of the waves during the period of incubation: hence those tranquil days near the solstice were termed *halcyon* days; and that the feathered voyager might want no accomplishment, they attributed to it the charm of song. They also kept the dead body of the bird as a safeguard against thunder, and as a relic by which the peace of families would be preserved. But it is not to the fanciful genius of the ancients alone that this bird is indebted for wonderful attributes. The Tartars and Ostiaks preserve the skin about their persons as an amulet against every ill; and they consider that the feathers have magic influence, when properly used, in securing a female's love: nor are such superstitions entirely confined to barbarous nations; for there are persons, it is said, who believe that if the body of a Kingfisher be suspended by a thread, its breast, by some magnetic influence, will invariably turn to the north.

We shall now endeavour to point out, in the briefest manner possible, some of the other most important species.—The Giant Kingfisher. (*Dacelo gigantea.*) This is the largest species known, measuring eighteen inches from the tip of the bill to the end of the tail: the colour of the plumage chiefly composed of olive-brown and a pale blue-green. Native of Australia.—Pied Kingfisher. (*Alcedo rudis.*) Size of the song-thrush. The plumage chiefly party-coloured of black and white. Native of various parts of Asia and Africa.—Smyrna Kingfisher. (*Alcedo Smyrnensis*). Size of the missel-thrush. A most brilliantly coloured bird; the bright blue of the wings yielding in lustre to none of the feathered tribes. Native of the hotter parts of both Africa and Asia.—Sacred Kingfisher. (*Alcedo sacra.*) Crown of the head and upper parts blue-green; the throat white; the under parts pale ferruginous, passing upwards like a collar round the neck. Native of the South Sea Islands.—Crested Kingfisher. (*Alcedo cristata.*) A singularly brilliant and elegant species. The crown of the head covered with long blue-green feathers, barred with black, form a crest; the back, wings, and tail are of an exceeding fine ultramarine blue; the breast, belly, thighs, and covert-feathers under the tail are of a bright orange-colour; and the legs scarlet. Native of Madagascar. The next species demands a more lengthened notice.

The American or Belted Kingfisher. (*Alcedo alcyon.*) This species is distinguished by being of a bluish slate-colour, with a ferruginous band on the breast; having a large collar of pure white round the neck; and an elevated crest on the head: legs extremely short. It inhabits all parts of the North American continent, and is the only species of its tribe found within the United States. "Like the love-lorn swains, of whom poets tell us," says Wilson, "he delights in murmuring streams and falling waters; not, however, merely that they may soothe his ear, but for a gratification somewhat more substantial. Amidst the roar of the cataract, or over the foam of a torrent, he sits perched upon an overhanging bough, glancing his piercing eye in every direction below for his

BELTED KINGFISHER.—(ALCEDO ALCYON.)

scaly prey, which, with a sudden circular plunge, he sweeps from their native element, and swallows in an instant. His voice, which is not unlike the twirling of a watchman's rattle, is naturally loud, harsh, and sudden; but is softened by the sound of the brawling streams and cascades among which he generally rambles. He courses along the windings of the brook or river, at a small height above the surface, sometimes suspending himself by the rapid action of his wings, like certain species of hawks, ready to pounce on the fry below; now and then settling on an old dead overhanging limb to reconnoitre. Mill-dams are particularly visited by this feathered fisher; and the sound of his pipe is as well known to the miller, as the rattling of his own hopper. Rapid streams, with high perpendicular banks, particularly if they be of a hard clayey or sandy nature, are also favourite places of resort for this bird; not only because in such places the small fish are more exposed to view, but because those steep and dry banks are the chosen situations for his nests. Into these he digs with bill and claws horizontally, sometimes to the extent of four or five feet, at the distance of a foot or two from the surface. The few materials he takes in are not always placed at the extremity of the hole, that he and his mate may have room to turn with convenience. The eggs are five, pure white, and the first brood usually comes out about the beginning of June, and sometimes sooner, according to the part of the country where they reside. They are very tenacious of their haunts, breeding for several successive years in the same hole, and do not readily forsake it, even though it be visited."

It is this species that Mr. Gosse, in his "Birds of Jamaica," thus prettily describes:—"Where the mangrove or the sea-grape stretches its branches down to the water's edge, stopping the way along the yellow beach, the Kingfisher delights to resort, sitting on a projecting twig; here he waits patiently for the approach of some small

rops perpendicularly, and
ils powerful beak, emerges
d returns to his former
it. It is a very shy and
e found scarcely any more
h: the posts of observation
are mostly such as com-
; and it was very wary;
unner can creep within
a alarm, and darts away
Often as it sits watching,
the moment of flying, it
ng chirr." "The form of
bird, in conjunction with
is wedge-shaped, the tip
the point. This form is
for its sudden and im-
on its fishy prey: as the
reat size, sharp point, and
e beak, are for holding it.
throat and breast are of
, and lie on each other
ating the access of any
, while, from their glossy,
water is thrown off in-
, as from the plumage of
again, though small, are
ms very short, the toes
, flat palm, and the claws
short, and sharp. When
t the Kingfisher digs his
e clayey or gravelly cliffs
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his 'Essays,' has fur-
ding notes on the habits
ith a selection from which
he article: "Modern or-
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assign it a place amongst
o me the change appears
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leed it: for there seems
external formation which
arbitrary transposition,
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ird, and, of course, some
e bare of feathers; while
deprived of that thick
markable in those birds
nder the denomination
feet are not webbed, it
d like that of land birds;
calculated to enable it
ater. Thus we see that
with the duck, nor dive
nor wade with the heron.
on in the water is quite
ears no similarity to the
e water-fowl which can
nder the surface, and
tain length of time, till
still the mode of taking
e that of the gulls, which
nd then plunge into the
ost this bird differs from
other habit." "If the
considered a water-bird
raws its sustenance from
the water, then our modern innovators ought to consider the osprey in the same light: and even the barn owl might give them a hint that she feels inclined to seek a new acquaintance; for I myself have seen her plunge into the water, bring out a fish, and convey it to her nest. Indeed, the swallow, with a still better grace, might ask permission to form a new division, distant both from land and water-birds, and call it ethereal; because it procures the whole of its sustenance from insects in the circumambient air." "I love to take my stand behind a large tree, and watch the Kingfisher as he hovers over the water, and at last plunges into it, with a velocity like that of an arrow from a bow. How we are lost in astonishment when we reflect that instinct forces this little bird to seek its sustenance underneath the water; and that it can emerge from it in perfect safety; though it possesses none of the faculties (save that of plunging) which have been so liberally granted to most other birds which frequent the deep! I sometimes fancy that it is all over with it, when I see it plunge into a pond, which I know to be well stocked with ravenous pike; still it invariably returns uninjured, and prepares to take another dip." "There are people who imagine that the brilliancy of the plumage of birds has some connection with a tropical sun. Here, however, in our own native bird, we have an instance that the glowing sun of the tropics is not required to produce a splendid plumage. The hottest parts of Asia and of Africa do not present us with an azure more rich and lovely than that which adorns the back of this charming little bird; while throughout the whole of America, from Hudson's Bay to Tierra del Fuego, there has not been discovered a Kingfisher with colours half so rich or beautiful. Asia, Africa, and America offer to the naturalist a vast abundance of different species of the Kingfisher. Europe presents only one; but that one is like a gem of the finest lustre."

KINKAJOU. (*Cercoleptes.*) A genus of Plantigrade Carnivora allied to the Coatimondis. It has a very long tail, which is prehensile at the end: the muzzle is short, the

KINKAJOU.—(CERCOLEPTES CAUDIVOLVULUS.)

tongue slender and extensile; with two pointed molars before, and three tubercular ones behind. One species only is known, (*Cercoleptes caudivolvulus.*) [See POTTO.]

KITE. (*Falco milvus.*) This well-known bird may be distinguished from all the rest of the hawk kind by its forked tail. Its length is a little more than two feet, and its breadth five: the bill is two inches long, very much curved at the end, and of horn

colour: the feathers on the head and neck are long and narrow, of a hoary colour, streaked with brown; legs yellow; claws black. It is almost perpetually on the wing; and appears to repose on the bosom of the air without making the least effort to support itself, so easy and elegant is its

KITE.—(FALCO MILVUS.)

motion there. It is, however, intent on its prey beneath; and as the young chickens, ducks, goslings, &c. suffer by the Kite's depredations, it is proscribed by the universal voice of every rural district. Were it not for this, its appearance would be welcomed as the harbinger of clear skies and fine weather; for it is in such that it makes its principal excursions. It breeds in large forests, or wooded hilly countries; and lays two or three eggs, of a whitish colour, spotted with pale yellow, and of a roundish form. In the breeding season it will at times approach near the outskirts of villages, seeking materials for its nest; but in general it avoids the haunts of man. The nest is usually in the fork of a thick tree, where it is concealed by the branches: the external part is formed of twigs, thickly matted together; and the interior is lined with wool, or some other soft and warm substance. The young remain a long time in the nest, and are extremely voracious in their appetite; so that to provide them with food requires considerable labour, and greatly heightens the parent bird's audacity.

There was a time when the Kite appears to have been of as much service in London, as the Vulture still is in some of the crowded cities of the East; for we read that in the reign of Henry VIII. the British metropolis swarmed with Kites, attracted thither by the various kinds of offal thrown into the streets, and that these birds fearlessly descended, and fearlessly performed the scavenger's office in the midst of the people, it being forbidden to kill them. When such a fact as this is brought before our eyes, the "street nuisances" of the present day appear like a comparative luxury; and we are apt to think that "metropolitan improvements" must have since gone on at such a rate that *there can* no longer be any room for them.

The Mississippi Kite. (*Falco mississippiensis.*) The celebrated ornithologist, Wilson, thus intro species: "In my perambulatio quently remarked this hawk sai in easy circles, and at a considera in the air, generally in compan turkey buzzards, whose manner so exactly imitates as to seem species, only in minature, or seen immense height. Why these whose food and manners, in othe are so different, should so freque ciate together in air, I am at a l prehend. We cannot for a mome them mutually deceived by the of each other's flight: the keenne vision forbids all suspicion of They may perhaps be engaged, at in mere amusement, as they see to soar to great heights previous or, what is more probable, they m in pursuit of their respective f that he may reconnoitre a vast surface below, and trace the tr mosphere to his favourite carrion; In search of those large beetles, terous insects, that are known oft the higher regions of the air; and the three individuals of this speci which I examined by dissection, only substances found in their For several miles, as I passed t Manchak, the trees were swarmi kind of cicada, or locust, that ma cuing noise; and here I observed of the hawk now before us recei among the trees like swallows, in pursuit of these locusts; so th it would appear, are the principa this species. Yet when we consid beak and talons of this bird, both so powerful, it is difficult to believe were not intended by nature for formidable prey than beetles, l grasshoppers; and I doubt not lizards, snakes, and small birds, fu with an occasional repast.

"This hawk, which proved to though wounded and precipitate vast height, exhibited, in his distr toms of great strength, and as a conquerable spirit. I no sooner a to pick him up than he instantly g striking rapidly with his claws, round and round as he lay part rump; and defending himself vigilance and dexterity; while hi eye sparkled with rage. Notwit all my caution in seizing him to home, he struck his hind claw into with such force as to penetrate bone. The Mississippi Kite measur inches in length, and three feet The head and neck of a hoary w lower parts a whitish ash; till, and narrow line round the eye, his rump, scapulars, and wing-cov blackish ash; wings very long an the primaries are black, marked side of the shaft with reddish sand upper plumage at the roots is w scapulars are also spotted with

slightly forked, anal, as well as the rump, jet black; legs vermillion, tinged with orange, and becoming blackish towards the toes; claws black; iris of the eye dark red; pupil black. The long pointed wings and forked tail point out the affinity of this bird to that family or subdivision of the *falcon* genus, distinguished by the name of Kites, which sail without flapping the wings, and rise from their talons as they glide along."

KITTEN [MOTHS]. A name given by collectors to Moths of the genus *Cerura*.

KIWI. A remarkable and curious bird of New Zealand, which we have described under APTERYX, (*Apteryx Australis*) or Wingless Emu. "These birds," the Rev. W. Yate observes, "hide themselves during the day; and come out of their retreats, which are generally small holes in the earth, or under stones, at night, to seek for their food. They run very fast, and are only to be caught by dogs, by torch-light, which they sometimes kick and bruise severely. They are highly prized, when taken, which is very rarely, by the natives; and their skins are kept till a sufficient number are collected to make into a garment. I have only seen one garment made of skins of this bird, during my six years and a half residence in New Zealand: and no consideration would induce the man to whom it belonged to part with it." The flesh is black, stringy, tough, and tasteless. [See APTERYX.]

KNOTHORN [MOTHS]. A name given by collectors to Moths of the genus *Phycita*.

KOKAKO. The name given by the natives of New Zealand to a corvine bird, called, by some, the New Zealand Crow. (See GLAUCOPIS CINEREA.)

KOODOO, or STRIPED ANTELOPE. (*Antilope strepsiceros.*) This magnificent animal has no rival among the Antelope genus for size and height, or for bold and widely-spreading horns. It is eight feet in length and four feet in height at the shoulder; with ponderous horns beautifully twisted, having a prominent spiral ridge running obliquely from the base to the point, and extending to the length of about four feet. The colour of the back and sides is a light brown, with a narrow white band along the spine, and several similar stripes descending obliquely down the sides and hips; the belly and under parts being of a pale hue. The head is large, the ears broad, and the limbs thick and robust; yet, notwithstanding its heavy make, it takes long bounding leaps with surprising agility. It inhabits the woody parts of Caffraria, along the banks of the rivers; and when pursued takes to the water.

KOODOO, OR STRIPED ANTELOPE. (ANTILOPE STREPSICEROS.)

KUKUPA. A beautiful species of Wood-pigeon known by this name in New Zealand, where it is very plentiful. It is described by the Rev. W. Yate as "much larger than the largest wild or tame pigeons in England, and has a plumage unrivalled among the extensive family of doves for splendour and variety: green, purple, and gold are, however, the prevailing colours. It is a heavy-flying bird, which makes it an easy prey to the hawks, with which the woods abound. They are easily killed with a spear or a musket; and if two birds are found upon the same tree, they are either so sluggish or stupid as not to fly when one is either killed or wounded. They feed upon the berries of the *Miro;* are most delicious eating; and are in season from January to June. The natives destroy vast numbers of these birds, and value them much, on account of both the quantity and the quality of their flesh.

LABRUS: LABRIDÆ. A genus and family of Acanthopterygious fishes, the species of which are very numerous in tropical seas; and even on our own shores they are abundant. The *Labridæ* family (Wrasses or Rock-fish, as they are also called) are chiefly remarkable for their thick fleshy lips, their large and strong conical teeth, their oblong scaly body, and their brilliant colours. They are further generically distinguished by a single dorsal fin, extending nearly the whole length of the back, part of the rays spinous, and behind the point of each spinous ray a short membranous filament. [See WRASSE.]

LACERTA: LACERTIDÆ. A genus and family of reptiles. [See LIZARD.]

LACKEY [MOTHS]. A name given by collectors to species of Moths of the genus *Clisiocampa*.

LADY-BIRD. The popular name given to a well-known genus of coleopterous in-

LADY-BIRD AND LARVA.

sects, which are sometimes seen, in vast numbers, in hop plantations, &c., where they are of infinite service in destroying the various species of *Aphides*, which are so prejudicial to certain plants and fruit-trees. [See COCCINELLA.]

LÆMODIPODA. The name of an order of marine Crustaceans, with sessile eyes, and in which the posterior extremity of the body exhibits no distinct branchiæ. The body is almost linear or filiform, and with the head consists of eight or nine segments, with some small tubercle-like appendages at its posterior and inferior extremity: the limbs are terminated by a strong hook. The females carry their ova beneath the second and third segments of the body in a pouch formed of approximated scales. The *Cyamus Ceti*, or Whale louse, is an example of this order.

LAGOMYS. A genus of Rodent Quadrupeds, separated from the Hares. The ALPINE LAGOMYS (*Lagomys Alpinus*) has sometimes been confounded with the Varying Hare, in consequence of the latter having also obtained the name of *Alpine;* but is a far smaller animal, scarce exceeding a Guinea-pig (*Cavia copayba*) in size, and measuring only nine inches in length; while it has a long head, and the ears are short, broad, and rounded. It is a native of the Altaic mountains, extending even as far as Kamtschatka; inhabiting woody tracts amidst rocks and cataracts, and forming burrows beneath the rocks, or lodging in their fissures. In fair weather they seldom leave their holes in the day-time; but when the weather is dull they are seen running about among the rocks, and frequently uttering a sort of whistle or chirping bird-like sound. During the autumn they prepare for their winter support, by collecting a plentiful assortment of the finest herbs and grasses; which, after drying in the sun, they dispose into heaps of various sizes, according to the number of animals employed in forming them: these are easily distinguishable even through the deep snow, being often several feet in height and breadth. These little hayricks, raised by their industrious labours, are often found of great service to the adventurous sable-hunters, whose horses would perish were it not for the supplies which they thus occasionally discover. For this reason the Alpine Hare has a name among every Siberian and Tartar nation where it is found: a circumstance which marks its importance to society; for few animals, so diminutive, are noticed in those regions, unless possessed of some valuable or attractive qualities.

The OGOTONA HARE. (*Lagomys Ogotona.*) This little animal, whose length is only six inches, inhabits the vast deserts of Mongolia, and the frontiers of Chinese Tartary, living in sandy plains or on rocky mountains. It sometimes burrows under the soil, or conceals itself under heaps of stones, and forms a soft nest at no great depth from the surface. Before the approach of winter these animals collect large quantities of herbs, with which they fill their holes; and, directed by the same instinct as t
Lagomys, they also form hemisph
of hay, about a foot high, for th
during the inclement season. Th
the Ogotona Hare is a pale bro
and white beneath: on the nos
lowish spot, which colour is seen
sides of the limbs and the space
rump. Hawks, magpies, and owl
minately prey on them; but
formidable enemies are the cat,
and the ermine.

The CALLING HARE (*Lagomy*
extremely resembles the Ogotona
described, but is rather smaller.
is long, and covered with fur to t
of the nose; the ears are large an
and the legs very short. The wh
covered with very soft, long, s
of a brownish lead colour, with
tipped with black; but on the s
lowish tinge prevails. It is so
of the south-east parts of Russia,
animal of so solitary a nature, tha
rarely to be seen even in places
quents. It commonly chooses it

CALLING HARE.—(LAGOMYS PU

in some dry gentle declivity, wh
is firm and covered with bushes
forms an obliquely descending b
entrance of which is scarcely mor
inches in diameter; and so amaz
intricate are the avenues which le
retreats, that they would with
culty be discovered, did not the
tray them. This voice resembles
of a quail, but is so loud that it ma
at a surprising distance, parti
there is nothing in the structure
gans which can account for so
tone. These little animals are
tremely gentle disposition, and ea
Their pace is a kind of leaping
not very quick, nor do they ru
account of the shortness of their h

LAGOPUS. [See PTARMIGAN.]

LAGOSTOMUS. A genus
Mammalia, in which the fore fe
nished with four toes, the hinder
only, as in the Cavies, all of th
with stout claws adapted for dig
ears are of moderate size, and the
paratively short. Their three an
lars of the upper jaw consist o
double layers, and the last of t
only known species (*Lagostomus
trichodactylus*) is about the size of a Har
habits Chili and Brazil; its gene

is grayish; the fur of two sorts, one entirely white, and the other, which is coarser, black, except at the base; the under parts white. Its motions are quick, and resemble those of a Rabbit; and it seeks its food by night,

LAGOSTOMUS FISCACCIA.

subsisting wholly on vegetables; inhabits the level country; and is not esteemed as food. It has very generally obtained the name of *Viscacha;* and it has also been figured in Griffith's edition of Cuvier's Regne Animal under the name of the *Diana Marmot.*

LAGRIIDÆ. A family of small Coleopterous insects, found in woods and hedges, and upon plants, counterfeiting death when alarmed, like the Cantharidæ. The head and thorax are narrow; the elytra soft and flexible; and the antennæ filiform. Their bodies are soft, and although they creep but awkwardly, they are active on the wing. The larvæ are found in the winter, under dead oak leaves, upon which they feed; when disturbed, they roll themselves up, with the head bent towards the tail; and they assume the pupa state without forming any cocoon. The species are few in number, but widely dispersed.

LAMB. The young of the Sheep.

LAMBRUS. A genus of short-tailed Crustacea, most of the species of which are tropical; many of them have very long fore-legs, and are curiously covered with knobs and spines.

The *Eurynome aspera* is the only member of this group found in the British seas.

LAMELLIBRANCHIATA. An order of acephalous (headless) molluscs, in bivalve shells; all the species being aquatic. In these the mouth is not situated upon a prominent part of the body, nor assisted in its choice of food by organs of special sensation in its neighbourhood; but the entrance to the stomach is buried between the folds of the mantle. The shell of these animals is composed of particles of carbonate of lime, exuded from the surface of the mantle, and contained in the cavities of cells, or between layers of membrane; and a constant relation is preserved between the size of the animal and that of its shell. The valves are connected together in various ways. In the first place, they are joined by a hinge; which is sometimes formed by the locking of a continuous ridge on one valve into a groove in the other, and sometimes by little projections which fit into corresponding hollows in the opposite valve. Near the hinge is fixed the *ligament;* which is composed of an elastic animal substance, and answers the purpose of binding the valves together, and at the same time keeping them a little apart, which may be regarded as their natural position. The Lamellibranchiata have usually more power of motion than the other Acephala; but they do not in general attain any great size. They are distributed over the whole globe, principally frequenting the shores or shallows; but the largest kinds are only found in warm latitudes.

LAMELLICORNES. The name by which an extensive section of Coleoptera tribe is distinguished. With respect to the size of the body, and the variety of forms exhibited in the head and thorax, it is one of the most beautiful of the coleopterous order; while those species which in their perfect state live upon fresh vegetable substances display metallic colours of great brilliancy: the majority, however, are of an uniform black or brown colour. All have wings; and they crawl but slowly on the ground. They feed on manure and other decomposed substances; but some species subsist on the roots of vegetables, and in their larva state do great injury to the cultivator. The antennæ are always short; they usually consist of nine or ten joints, and are terminated in a club, generally composed of the three last, which are lamellar, and are either arranged like a fan, a comb, or the leaves of a book. The larvæ have the body long, nearly semi-cylindrical, soft, often transversely wrinkled, whitish-coloured, twelve-jointed, with the head scaly, armed with strong jaws and six scaly feet. A general idea of their form may be obtained from that of the grub which produces the common Cockchafer. Some species do not change to pupæ until they have passed three or four years as larvæ; they form for themselves in their retreats, with the earth or the debris of the materials they have gnawed, a cocoon of an ovoid form, or in the shape of an elongated ball, of which the particles are fastened together with a glutinous secretion.

LAMELLIPEDES. The term applied to the third section of the order *Conchifera Dimyaria,* containing Bivalves, with the foot of the animal broad and thin; as in the genus *Cardiacea,* &c.

LAMPREY. (*Petromyzon marinus.*) This fish has a long and slender body, nearly cylindrical, resembling an eel; and its skin, which has no scales, is covered with a glutinous mucus. The Marine or Sea Lamprey sometimes grows to a very large size (three feet in length); the British specimens, however, are generally far inferior in magnitude. The usual colour of the Lamprey is a dull brownish olive, clouded with yellowish-white variegations; the back darker than the other parts, and the abdomen paler: the fins are tinged with dull orange, and the tail with blue. The mouth is of a round form, resembling that of a leech, and, like it, possesses the power of sucking and adhering to stones or other substances with extraordinary tenacity. The tongue, which moves

to and fro like a piston, and which is the principal instrument in the act of suction, is furnished with two longitudinal rows of small teeth, and the mouth is lined with several circular rows. On the top of the head is a small orifice or spout-hole, through which is discharged the superfluous water taken in at the mouth and gills; and on each side the neck is a row of seven equidistant spiracles, or breathing-holes. In reference to this respiratory apparatus Mr. Owen has remarked, that "when the Lamprey is firmly attached, as is commonly the case, to foreign bodies, by means of its suctorial mouth, it is obvious that no water can pass by that aperture from the pharynx to the gills; it is therefore alternately received and expelled by the external apertures." The first dorsal fin, which is rather shallow, with a rounded outline, commences towards the lower part of the back; the second is nearly of the same extent, but with a subtriangular outline: the tail is short, and slightly rounded.

The Lamprey usually quits the sea in the spring for the purpose of spawning, and after an absence of a few months returns to its original marine element. When in motion this fish is observed to swim with considerable vigour and rapidity, but it is more commonly seen attached by the mouth to some large stone or other substance, the body hanging at rest, or obeying the motion of the current, so strong is its power of suction. Its general habits seem pretty much to resemble those of the eel; and, like the eel, it is remarkably tenacious of life. The Lamprey, though its ancient repute no longer remains, is still considered as a delicacy at certain seasons of the year; and the potted Lampreys and Lamperns of Worcester are in high estimation; those taken in the Severn being preferred to all others. During cold weather, this fish conceals itself in the crevices of rocks; and it is a usual expedient with anglers to form pits extending to the water-side in the vicinity of its haunts; into these a little blood is thrown, to induce the Lamprey to come forth, when it is readily taken.

The River Lamprey, or Lampern. (*Petromyzon fluviatilis.*) This well-known species inhabits fresh waters, and is common in the Thames, the Severn, the Dee, the Tweed, &c. It is from twelve to fifteen inches in length; has a rounded head, a slender cylindrical body for about two-thirds of its length, and then compressed to the end of

LAMPREY.—(PETROMYZON FLUVIATILIS.)

the tail. "Formerly," says Mr. Yarrel, "the Lampern was considered a fish of considerable importance. It was taken in great quantities in the Thames from Battersea Reach to Taplow Mills, and was sold to the Dutch as bait for the Turbot, Cod, and other fisheries. Four hundred thousand have been sold in one season for this purpose, at the rate of forty shillings per thousand. From five pounds to eight pounds a thousand have been given; but a comparative scarcity of late years, and consequent increase in price, has obliged the line fishermen to adopt other substances for bait. Formerly the Thames alone supplied from one million to twelve hundred thousand Lamperns annually. They are very tenacious of life, and the Dutch fishermen managed to keep them alive at sea for many weeks." Great quantities are also taken in the rivers of Germany: after being fried, they are packed in barrels by layers, between each of which is a layer of bay leaves and spices, sprinkled over with vinegar; and in this state they are sent to other countries. This species spawns in April and May. It feeds on insects, worms, &c., and is a prolific fish.—There are a few more species, of a smaller size; but in all the main characteristics they correspond with the foregoing.

LAMPYRIDÆ. A family of Coleopterous insects, having for its type the genus *Lampyris*. The *Lampyridæ* are distinguished by having five joints to all the tarsi; flexible elytra; and the body usually elongated and somewhat depressed; by the thorax projecting more or less over the head; small mandibles, terminated by a sharp point; the penultimate joint of the tarsi always bilobate; the terminal claws simple; and the antennæ approximated at the base. In some species the females are apterous, and in others furnished only with short elytra. They are voracious in their habits; preying in the larva state upon the bodies of snails, and not upon plants. The species are, for the most part, exotic, and are often ornamented with red or yellow and black colours. Scarcely any exceed an inch in length. When alarmed, they fold their antennæ and legs against the body, and remain motionless, as though dead; many, also, at such times, bend their abdomen downwards. The three most important genera are *Lyco*, *Omalisus*, and *Dictyoptera*. [See Glow-worm.]

LANNER. (*Falco lanarius.*) A bird of the long-winged Hawk kind, rather less than the buzzard. It breeds in France, where it continues the whole year, is very docile, and seems well adapted to all the purposes of hawking. It is also met with in Ireland, and is thus described by Pennant: The ear is a pale blue; the crown of the head, brown and yellow clay-colour; above each eye a broad white line passes to the hind part of the head; and beneath each a black mark points downwards. The throat is white; the breast is tinged with dull yellow, and marked with brown spots pointing downwards; the thighs and vent are spotted in a similar manner; the back and coverts of the wings are a deep brown, edged with a pale tinge; the quill-feathers are dusky; the inner webs are marked with

oval rust-coloured spots; and the tail is spotted in the same manner as the wings.

LANTERN-FLY. (*Fulgora lanternaria.*) This insect is curious both on account of its size and its singular properties. It is nearly three inches and a half in length from the tip of the front to that of the tail, and about five inches and a half broad with its wings expanded: the body is of a lengthened oval shape, sub-cylindric, and divided into several rings or segments; while the head is distinguished by a singular prolongation, which sometimes equals the rest of the body in size. In this projection the luminous property of the Lantern-fly is said to exist; but the luminosity of this insect — of which there are several species — is doubted by most naturalists; who say, that if it really exists, it is only at particular seasons. It is therefore but right that we should give our authority: — Madame Merian, in her work on the Insects of Surinam, says, "The Indians once brought me, before I knew that they shone by night, a number of these lantern-flies, which I shut up in a large wooden box. In the night they made such

LANTERN-FLY.—(FULGORA LANTERNARIA.)

a noise that I awoke in a fright, and ordered a light to be brought; not knowing from whence the noise proceeded. As soon as we found that it came from the box, we opened it; but were still much more alarmed, and let it fall to the ground in a fright, at seeing a flame of fire come out of it; and as many animals as came out, so many flames of fire appeared. When we found this to be the case, we recovered from our fright, and again collected the insects, highly admiring their splendid appearance."

The ground-colour is an elegant yellow, with a strong tinge of green, and marked with numerous bright brown stripes and spots: the wings are very large, and the lower pair are decorated with a large eye-shaped spot on the middle of each, the iris or border of the spot being red, and the centre half red and half semitransparent white; the head or lantern is pale yellow, with longitudinal red stripes. This beautiful insect is a native of several parts of South America. [See FULGORA.]

The *Fulgora candelaria*, a native of China, is a much smaller species; measuring about two inches in length, and two inches and a half in breadth. The body is oval, and the head produced into a long horn-shaped process: the colours are very elegant; the head and horn being of a fine reddish brown, and covered with numerous white specks: the thorax is of a deep yellow, and the body black above, but deep yellow beneath; the wings are oval; the upper pair blackish, with numerous green reticulations, dividing the whole surface into innumerable squares, and farther decorated by several yellow spots: the under wings are orange-coloured, with broad black tips.

LAP-DOG. The little pets of the drawing-room and boudoir who bear the enviable appellation of Ladies' Lap-dogs, and who for years past have been growing "small by degrees and beautifully less," belong to that race of Dogs which have been described as "timid, fond, and affectionate — the most grateful for kindness, the most patient under ill-treatment;" — of course we mean the SPANIELS; and, therefore, under that word will the Lap-dog's zoological character be found. Nature originally, without doubt, had some hand in the production of these highly-favoured diminutives; but her empire over them has long been usurped by Fancy and Fashion, who have agreed — that the ears of these companions of female loveliness should be remarkably long and full, and the hair (of the ears more especially) plentiful and beautifully waved; that "liver-colour-and-white," though its pretensions to beauty are but moderate, is not to be despised; that "black-and-white" is entitled to our particular regard; but that the dear little "black-and-tan" variety is vastly to be preferred to either; while it is absolute treason to honour any with the title of "King Charles's breed" which do not possess certain indubitable signs of royal descent, as a black-roofed mouth, &c. There is also a variety of the Spaniel, generally of a white colour, and the hair of which is extremely long: it is called the Maltese dog, and is said to be one of the most elegant of the Lap-dog tribe.

LAPPET [MOTH]. A name given by collectors to species of Moths, of the genera *Gastropacha* and *Eutricha*.

LAPWING or PEEWIT. (*Vanellus cristatus.*) This bird, which is about the size of a pigeon, belongs to the snipe and plover tribe. It is found in this country in large flocks, except during the pairing season, when it separates for the purposes of incubation. It builds a slight inartificial nest on the ground, and lays four eggs of an olive cast spotted with black. The Lapwing's bill is black; the crown of the head and the crest are of a shining black; the cheeks and sides of the neck, white; the throat and forepart of the neck are black; the hind part, a mixture of red, white, and cinereous. The back and scapulars are of a glossy green colour, the latter variegated with purple: the small wing-coverts are of a resplendent black blue and green hue; the greater quill-feathers are black; and the breast and belly are white. The vent and coverts of the tail are orange-coloured; the tail is black and white; and the legs are red. The young birds run about very soon after they are hatched. During this period the old ones

to and fro like a piston, and which is the principal instrument in the act of suction, is furnished with two longitudinal rows of small teeth, and the mouth is lined with several circular rows. On the top of the head is a small orifice or spout-hole, through which is discharged the superfluous water taken in at the mouth and gills; and on each side the neck is a row of seven equidistant spiracles, or breathing-holes. In reference to this respiratory apparatus Mr. Owen has remarked, that "when the Lamprey is firmly attached, as is commonly the case, to foreign bodies, by means of its suctorial mouth, it is obvious that no water can pass by that aperture from the pharynx to the gills; it is therefore alternately received and expelled by the external apertures." The first dorsal fin, which is rather shallow, with a rounded outline, commences towards the lower part of the back; the second is nearly of the same extent, but with a subtriangular outline: the tail is short, and slightly rounded.

The Lamprey usually quits the sea in the spring for the purpose of spawning, and after an absence of a few months returns to its original marine element. When in motion this fish is observed to swim with considerable vigour and rapidity, but it is more commonly seen attached by the mouth to some large stone or other substance, the body hanging at rest, or obeying the motion of the current, so strong is its power of suction. Its general habits seem pretty much to resemble those of the eel; and, like the eel, it is remarkably tenacious of life. The Lamprey, though its ancient repute no longer remains, is still considered as a delicacy at certain seasons of the year; and the potted Lampreys and Lamperns of Worcester are in high estimation; those taken in the Severn being preferred to all others. During cold weather, this fish conceals itself in the crevices of rocks; and it is a usual expedient with anglers to form pits extending to the water-side in the vicinity of its haunts; into these a little blood is thrown, to induce the Lamprey to come forth, when it is readily taken.

The River Lamprey, or Lampern. (*Petromyzon fluviatilis.*) This well-known species inhabits fresh waters, and is common in the Thames, the Severn, the Dee, the Tweed, &c. It is from twelve to fifteen inches in length; has a rounded head, a slender cylindrical body for about two-thirds of its length, and then compressed to the end of

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are very assiduous in their attention to their charge: on the approach of any person, they flutter round his head with great inquietude, and if he persists in advancing they will endeavour to draw him away, by running along the ground as if lame, and thereby inviting pursuit. It subsists chiefly on worms and the animalcula of the sea-shore. These birds are very lively and active during their love season, being almost continually in motion, sporting and frolicking in the air in all directions, or springing and bounding from spot to spot with great agility.

"Far from her nest, the lapwing cries
'away.'"—*Shaks.*

In the month of October they are in good condition for the table, and their eggs are considered a delicacy. [See TERUTERO.]

LARIDÆ. Birds of the Gull tribe, all of which are oceanic in their habits, and distinguished for great powers of flight. [See GULL and LESTRIS.]

LARK. (*Alauda.*) There are many species of this bird, and their great characteristic distinction from other birds consists in the extreme elongation in an almost straight line of their hinder claws; by this formation the prehensile faculty is nearly destroyed, and consequently, with the exception of a few species with shorter claws, they are incapable of perching upon trees. The bill is straight, slender, bending a little towards the end, and sharp-pointed: the toes are all divided to their origin, the nostrils are covered with feathers, and the tongue is bifid. These birds are famed for singing during flight; and there is something very delightful in listening to their melodious strains when the performers are soaring aloft, beyond the reach of human ken. From the situation of their nests they are greatly exposed to the attacks of predaceous animals of the weasel kind, which destroy great numbers of the eggs and young. The species which first claims our notice is

The SKY-LARK. (*Alauda arvensis.*) This delightful songster, the most harmonious of the whole family, is universally diffused throughout Europe, and is everywhere extremely prolific. It is about seven inches in length: bill dusky, the base of mandible yellowish; the feather of the head are dusky, edged brown; they are rather elongate be set up as a crest: the plum upper part of the body is red with the middle darkest, and the pale: the upper part of the brea spotted with black; and the lo the body is a pale yellow. The brown; legs dusky; claws dusk one being very long, straight, The male is of a deeper colour, than the female; and is further di by having the hind claw longer. cies is subject, however, to consi riety; and has even been found white colour. The Sky-lark con song early in the spring, continu the whole summer, and is one birds that chant whilst on the w it first rises from the earth, its feeble and interrupted; as it as ever, they gradually swell to the and long after the bird has reach where it is lost to the eye, it still to charm the ear with its melody almost perpendicularly, and by springs, and descends in an oblique unless when threatened with da it drops like a stone. The femal nest on the ground, close to some serves at once to hide and shelte times in corn-fields; and, at ot rious sorts of pasturage. She l five dirty white eggs, blotched with brown; and she generall two broods in a year. These p live on seeds and insects, they are dant in the more open and high situations abounding in corn, be dom seen in extensive moors a from arable land. In winter th in vast flocks, grow very fat, an in great numbers for the table.

SKY-LARK.—(ALAUDA ARVENSIS.)

The WOOD-LARK (*Alauda* greatly resembles the Sky-lark, much smaller, and the colours a tinct. The feathers on the crow parts of the body are marked spots edged with light reddish br the beak over the eye is a narrow white band surrounding the cr head; the feathers over the ears beneath which is another light b dusky; neck and breast yello tinged with brown, and marked spots; tail short; the four outer each side black, with dirty white coverts very long and brown; le flesh-colour; hind claws long, bent. It is generally found near of woods, perches on trees, and the night, so as sometimes to b for the nightingale. When kept near one of the latter birds, it often excel it, and, if not speedily se fall a victim to emulation. This be easily distinguished from th during flight, as it does not mount in a perpendicular manner, as hovering and singing in the air

that bird; but will often rise to a great height, and keep flying in large irregular circles, singing the whole time with little intermission, sometimes for an hour together.

WOOD LARK.—(ALAUDA ARBOREA.)

Its song, though not so loud as that of the Sky-lark, is more melodious, and may sometimes be heard in fine weather even in the depth of winter. This bird feeds on grain, seeds, and insects; its nest is placed under a heft of high grass or furze, or in a low bush; and is made of dry grass, lined with finer grass and hair. The female lays four or five eggs, of a dusky colour, interspersed with deep brown spots, and, like the former species, often raises two broods in the year. It is a general inhabitant of Europe, but not so plentiful as the Sky-lark. It is more abundant in Devonshire than in any other part of England. These birds get very fat after harvest, and are taken in great numbers.

The CRESTED LARK (*Alauda cristata*) is distinguished from other species by the feathers on the crown of the head being much elongated and forming a crest, which is darker than the rest of the plumage. The back is ash-coloured, spotted with brown; the breast and belly yellowish white; and the throat is beautifully spotted. The tail is rather short; the two outer feathers, with their exterior edges, white, tinged with red. The song of this bird is fine, but not equal to the Sky-lark's: its aërial excursions are likewise shorter. Though found in many parts of Europe, frequenting the banks of lakes and rivers, it does not appear to be known in England.

The TIT-LARK. (*Anthus pratensis.*) This bird, which by the older writers was classed with the larks, belongs to a different genus and family; but may be described here. It is of an elegant and slender shape, five inches and a half in length, and nine in breadth. The bill is black; the back and head are of a greenish brown colour, spotted with black; the throat and lower part of the belly are white; the breast is yellow, spotted with black; the tail is dusky; and the feet are of a pale yellow colour. In many parts of England this is a very common bird; and is met with in marshes, barren moors, and mountainous heaths: *its nest, made of dry grass and stalks of plants, lined with fine grass and horse-hair, is placed on the ground amongst furze and long grass.* The eggs are generally six in number, but vary considerably in size and colour: and the Cuckoo is said to deposit its eggs among them. During the period of incubation, *the male* pours forth its short but pleasing song; it generally springs into the air, increasing its song as it descends to the ground, from a height of 30 or 40 feet. In winter many Tit-larks betake themselves to the sea-shore.

The TREE TIT-LARK. (*Anthus arboreus.*) This bird greatly resembles the Tit-lark; but may be readily distinguished from it, by the bill being much broader at the base, and the legs being yellowish-brown instead of dusky. It is a solitary species, never associating in flocks, nor seen on the moors and downs, where the Titlark is most abundant. The nest of this species is placed only amongst high grass in the most cultivated parts, where there are plenty of trees. Its eggs, of which there are four, are of a dirty bluish white, blotched and spotted with purplish brown. Its flight is very peculiar, mounting up in a fluttering manner, and after some time descending to a neighbouring tree with motionless wing and expanded tail, and then alighting on the ground, warbling during its descent. It is chiefly found in the western and south-western counties of England.

There are other species enumerated by ornithologists; as the MEADOW LARK, a species common in many parts of Italy: the SHORE LARK, known as an inhabitant both of Europe and America, and very abundant in the latter continent: the BROWN LARK: the ROCK LARK, found at the Cape of Good Hope: the MARSH LARK, native of Germany: the SIBERIAN LARK: the RED LARK: the BLACK LARK, &c.

LARRIDÆ. A family of Hymenopterous insects, small in extent, and the species of which it is composed are but of moderate size. They are distinguished by the labrum being entirely or partially concealed, and the mandibles deeply notched on the inner side near the base. They are ordinarily found in sandy situations, and are fossorial in their habits. One species, the beautiful and rare *Dinetus pictus*, is remarkable for the convoluted antennæ of the males; and the exotic genus *Palarus* is not less distinguished by the constricted segments of its abdomen.

LATHAMUS. A genus of Parrakeets found in Australia; as an example we may mention

LATHAMUS DISCOLOR, termed by the colonists of Van Diemen's Land the "Swift Parrakeet." During September and the four following months this migratory species is abundant in the gum forests, and very common in the shrubberies and gardens at Hobart Town; small flights of them continually flying up and down the streets and over the houses. They gather a fine clear honey from the fresh-blown flowers of the *Eucalypti* (especially *E. gibbosus*), which daily expand. *They are quite fearless, and allow the inhabitants to pass within a few feet of their heads.* Their eggs are laid in holes in the loftiest and most inaccessible trees. For

other species see Mr. Gould's Birds of Australia.

LEAF-CUTTING BEES. [See MEGACHILE.]

LEECH. (*Hirudo.*) A genus of suctorial animals, or red-blooded worms, of aquatic habits, provided with a sucker at both ends of the body: the greater part are inhabitants of fresh water; some, however, are only found in the sea; while others live in moist situations near stagnant water, pursuing earth-worms, &c. Many of them accumulate their eggs into cocoons, enveloped by a fibrous excretion, at first sight so closely resembling sponge in structure as to have been once mistaken by a distinguished naturalist for a new genus of that family. The species which principally deserves our attention is

LEECHES.—(HIRUDO MEDICINALIS.)

the common Leech (the *Hirudo medicinalis* of Linnæus). This species, which is usually about the length of the middle finger, bears a considerable resemblance to the earth-worm in its general structure, but differs as to the conformation of its mouth and digestive apparatus. Its skin is composed of from ninety to a hundred or more soft rings, by means of which it acquires its agility, and swims in the water. It has a small head; a black skin, edged with a yellow line on each side, and some yellowish spots on the back; and the belly, which is of a reddish colour, is marked with pale yellow spots. But the most remarkable part is the mouth, which is situated in the middle of the cavity of the anterior sucker; and three little cartilaginous bodies, or jaws, are seen to be disposed around it, in such a manner that the three edges form three radii of a circle. Each of these has two rows of minute teeth at its edge, so that it resembles a small semicircular saw. It is imbe its base in a bed of muscle, by the which it is worked, in such a manne cut into the skin,—a sawing m being given to each piece separately in this manner that the tri-radiate the leech-bite is occasioned; each r a separate little saw, this apparatus the leech to penetrate the skin causing a dangerous wound. The l character of the wound is very favou the flow of blood; which is further p by the vacuum created by the actio sucker. The alimentary canal co an œsophagus, a long stomach, wit sacs, and an intestine. The open digestion is extremely slow, notwiths the rapid and excessive manner in the Leech fills its stomach; a sing of blood will suffice for many month more than a year will sometimes before the blood has passed through mentary canal in the ordinary during all which period so much blood as remains undigested in the continues in a fluid state. This for the reluctance of the Leech, aft used to abstract blood, to repeat th tion; it not only being gorged at t but provided with a sufficient suppl much longer. Indeed, the true m Leech does not seem to take any n ment, but subsists on the fluids of fr &c. Leeches are furnished with ten simple eyes, which may be with a magnifying glass as a semi- row of black points, situated a mouth upon the sucking surface of disc; and to these visual specks it posed they are indebted for whatev they possess.

Leeches derive their principal from the use that is made of them medial agent; but it should be that there are only two species so co and these are principally derived South of France, Sweden, Pola Hungary. It is common for the dealers to drive horses and cows ponds, that the Leeches may fatten pagate more abundantly by such blood. Children are also employed them by the hand; and grown perso into the shallow waters in the spri year, and catch the Leeches that a their naked legs. In summer, wh have retired to deeper waters, a sor is constructed of twigs and rushes, b a few are entangled. They are als by laying baits of liver, to which the resort, and are then caught; but t method is thought to make them sic Leech may be known to be in good if it be active in the water, and plun taken out. The most certain me inducing Leeches to bite, is to clea skin thoroughly; and they should posed to the air for a short time pre their application, as by this means t bite more freely. If they are reluctan may be applied to the part by bein lightly in the fingers, or they may be in a leech-glass, which is a preferabl

They should not be disturbed whilst sucking, nor the patient be exposed to too great warmth, or they will fall off; this they should always be permitted to do of their own accord. When the Leech has dropped off, it should be seized by the tail, and drawn between the finger and thumb, so as to cause it to disgorge most of the blood; or this may be effected by putting it in a weak solution of common salt. It should then be placed in many successive fresh waters, and if not injured, it may be used again at a future time.

"The increasing scarcity of Leeches," as is remarked by Mr. Broderip, "renders their preservation and propagation objects of primary importance. The death of a vast number of Leeches is occasioned by errors in the method of keeping them. Though aquatic animals, it is not enough that they be supplied with water. They breathe by their entire surface, and are accustomed to change their skins every four or five days. Their body is covered, like that of all animals and plants which inhabit the water, by a shiny or mucilaginous fluid, which not only enables them to glide through the water, but keeps an aërial stratum in close contact with their respiring surface. When present in a limited degree, this mucous secretion is highly serviceable to them; in excess it is destructive. It is impossible for them to diminish it when it has accumulated, or to denude themselves entirely of their old skin, in water only. They must have some resisting body to creep over or through in order to accomplish this object." The most effectual method of preserving them appears to be that recommended by Fee; which is as follows:—"Into a marble or stone trough a layer of seven inches of a mixture of moss, turf, and charcoal of wood is to be put, and some small pebbles placed above it; at one extremity of the trough, and midway between the bottom and the top, place a thin plate of marble pierced with numerous small holes, upon which there should rest a stratum of moss, or portions of the equisetum palustre, or horse-tail, firmly compressed by a stratum of pebbles. The trough to be replenished with water only as high that the moss and pebbles should be but slightly moistened. A cloth is to be kept over the mouth of the trough. This is imitating as near as possible their natural condition, and the charcoal not only aids in keeping the water sweet, but appears to prevent the Leeches being attacked by parasitic animals, to which they are very liable. The water should be changed about once a week, and more frequently in warm weather." To judge of the vast numbers of Leeches that are required for medical uses, and of the great importance it is to ascertain the best method of preserving them, it is only necessary to state, that five only of the principal dealers in London import between seven and eight millions annually!

The Horse-Leech. (*Hirudo sanguisuga*, Linn.) The body of this species is depressed; and in the bottom of the mouth there are certain sharp tubercles. The mouth and tail are slender; the body is pretty thick; the belly is of a yellowish green colour, and the back is dusky. It is very common in shallow pools and stagnant waters.

The Mechanical Leech. (*Hirudo geometra*, Linn.) This species is found adhering to the trout and some other fishes after the spawning season. Its motions are performed by a particular expansion of the head and tail, as if measuring like a compass; and hence it receives its name. The body is greenish, spotted with white; and both ends are dilatable and equally tenacious.

The Tuberculated Leech. (*Pontobdella muricata*.) A marine species, which adheres strongly to fish, and leaves a black impression on the place. The body, which is taper and rounded at the greater extremity, is furnished with two small horns, strongly annulated, and tuberculated on the rings; and the tail is dilatable.

LEIPOA. A genus of Gallinaceous birds, the only known species of which is

Leipoa Ocellata. The "Native Pheasant" of the colonists of Western Australia; which in its habits is very like the domestic fowl. It deposits its eggs in a mound of sand, about three feet high, the inside being lined with layers of dried leaves, grasses, &c.

OCELLATED LEIPOA.—(*L. OCELLATA.*)

The bird never sits on the eggs, but leaves them to be hatched by the heat of the sun's rays. The natives are very fond of the eggs, and rob the mounds twice or thrice in a season. These mounds resemble ant-hills; and, indeed, ants often abound in them. Captain Grey observes that the nests are at least nine feet in diameter and three feet high. By the natives this bird is named *Ngowoo*.

LEMMING. (*Georychus lemmus*.) There are several species of this animal, varying in size and colour according to the regions they inhabit. They are found in Norway, Lapland, Siberia, and the northern parts of America; those of Norway being nearly the size of a water rat, and of a tawny colour, variegated with black, the sides of the head and the under parts being white; while those of Lapland and Siberia are scarcely larger than a field mouse, and much less distinctly marked. The head of the Lemming is large, short, thick, and well furred; the eyes and ears small; the body thick; and the limbs short and stout, especially the

fore legs: they have five toes on each foot, and the claws on the fore feet are strong, compressed, and rather crooked: the tail is very short, thick, cylindrical, and covered with strong hairs, disposed like those of a

LEMMING.—(GEORTCHUS LEMMUS.)

pencil at the tip. They subsist entirely on vegetable food. They form shallow burrows, in summer time, under the ground, and in winter make long passages under the snow in search of food. The most extraordinary characteristic of these animals is their migrations, which they undertake at irregular epochs — upon an average about once in ten years: these migrations are supposed to arise from an unusual multiplication of the animals in the mountainous parts they inhabit, together with a deficiency of food; and, perhaps, a kind of instinctive prescience of the severity of the approaching winter. They descend from the mountains in incredible numbers, and assemble in the plains; and then, as it were with one consent, they march on in a direct course, no obstacle deterring them, and nothing seeming to make them turn aside. If they are disturbed while swimming over a lake or river, they will not recede, but swim on, and soon re-assume their former order. They chiefly move at night, or early in the morning; so completely devouring the herbage as they pass, that the ground has the appearance of having been burnt. Exposed as they are to every attack from owls, hawks, weasels, &c., and so many being destroyed in attempting to cross rivers and lakes, the diminution of their numbers is very great; so that comparatively very few return to their native haunts. When enraged, they raise themselves on their hind feet, and utter a barking sound. They breed several times in the year, producing five or six at a birth. Formerly, so gross was the superstition of the common people of Norway, and so great their terror at these devastating marches, that they believed the Lemmings fell from the clouds; and they were actually exorcised by the clergy.

The HUDSON'S BAY LEMMING is of an ash colour, with a tinge of tawny on the back, having a dusky stripe along its middle, and a pale line on each side. The hair is very fine, soft, and long. It is known that they migrate like the foregoing species. It occurs in Labrador, and all parts of Northern America bordering on the Polar Sea. It has the character of being very inoffensive, and so easily tamed that, when caught, it will become not only reconciled to its situation in a day or two, but show a fondness for the caresses of its master.

LEMUR. A genus of Quadrumanous animals which approximate to the Monkey tribe in having opposable thumbs on both pairs of extremities, and to the ordinary quadruped in their elongated pointed head and sharp projecting muzzle; they are also void of that mischievous and petulant disposition which so much distinguishes the monkey tribe; and at the same time they differ from them in their dentition. They are all natives of Madagascar and of some of the smaller islands in its neighbourhood. The general form of the body is slender and elongated; the head shaped somewhat like that of a fox; and the eyes large, as in the generality of nocturnal animals. A long curved claw on the first fingers of the hind feet distinguishes them from all other quadrumana. Their hind legs are much longer than their anterior limbs, and for the most part they are excellent leapers. Gentle and harmless as these animals in general are, they will defend themselves with great resolution when attacked. In their natural haunts they associate in troops; but they are seldom seen abroad in the day-time, always as much as possible secluding themselves from the light. They subsist on fruit, insects, and small birds. Their fur is usually very fine and silky; and the tail long and bushy: there are some species, however, which are wholly destitute of a tail, and others where that member is merely rudimentary. [See LORI: for the *Flying Lemur*, see GALEOPITHECUS.]

LEO. The classical appellation for the Lion. [See LION.]

LEOPARD. (*Felis leopardus.*) A graceful and active animal belonging to the feline tribe, but so like the Panther as to be frequently taken for it by the more casual observer. The principal difference is in size; the Leopard being considerably the smaller of the two, and of a paler yellow colour; while the ocelli or rounded marks on the Panther are larger, and more distinctly formed. Both animals are widely diffused through the tropical regions of the Old World; being natives of Africa, Persia, China, India, and many of the Indian islands. The general length of the Leopard, from

LEOPARD.—(FELIS LEOPARDUS.)

nose to tail, is four feet; and of the tail, two and a half; and so great is its flexibility of body, that it is able to take surprising leaps, to swim, climb trees, or crawl like a snake upon the ground, with nearly equal facility. When pursued, they often take refuge in trees, and occasionally spring upon their prey from the branches. In speaking of the Leopard, Mr. Swainson observes, "Although the names of Leopard and Panther have

been long familiar in common language, and have conveyed the idea of two distinct species, yet it is perfectly clear that no scientific writer of the last generation either described, or indeed appeared to know, in what respects the animals differed. It seems that numerous specimens of what are called the Leopard are in the Zoological Gardens, and one has been figured in the book so entitled; but Mr. Bennett has not made the slightest attempt to investigate the subject, or to throw any light upon this difficult question. In this dilemma we shall therefore repose on the opinions of Major Hamilton Smith, whose long experience and accuracy of observation are well known, and whose authority in this department of nature deservedly ranks above that of any other naturalist of this country. The Leopard, as defined by Major Smith, when compared with the Jaguar and Panther of naturalists, is uniformly of a paler yellowish colour, rather smaller, and the dots rose formed, or consisting of several dots partially united into a circular figure in some instances, and into a quadrangular, triangular, or other less determinate forms: there are also several single isolated black spots, which more especially occur on the outside of the limbs." Mr. Swainson then proceeds to say, "Our own opinion of the specific dissimilarity between the Leopard and the Panther, judging from what has been written on the subject, is in perfect unison with that of Major Smith; while the following remark of that observing naturalist, luminously inserted in his account of the Panther of antiquity, seems to us almost conclusive:—'The open spots which mark all the Panthers have the inner surface of the annuli or rings more fulvous (in other words darker) than the general colour of the sides; but in the Leopard no such distinction appears, nor is there room, as the small and more congregated dots are too small to admit it.' In truth, if there is any reliance to be placed in the most accurate figures hitherto published, the small spots of the Leopard and the large ones of the Panther must strike even a casual observer, and lead him to believe that the two animals were called by different names." Like most feline animals, Leopards are fierce and rapacious; and, it is remarked, that though they are ever devouring, they always appear lean and emaciated. They are taken in pitfalls, covered over with slight hurdles, on which a bait of flesh is placed. Their skins are very valuable.

The Hunting Leopard, or Cheetah. (*Guepardis jubatus.*) This species exhibits in its form and habits a mixture of the feline and canine tribes; so much so, indeed, as to have induced some naturalists to designate it as a distinct genus under the name of *Cynailurus*, or *Guepardis*. "Intermediate in size and shape between the Leopard and the hound, observes Mr. Bennett, in the *Tower Menagerie*, he is slenderer in his body, more elevated on his legs, and less flattened on the fore part of his head than the former, while he is deficient in the peculiarly graceful form, both of head and body, which characterizes the latter. His tail is entirely that of a cat; and his limbs, although more elongated than in any other species of that group, seem

Hunting Leopard.—(Guepardis jubata.)

to be better fitted for strong muscular exertion than for active and long-continued speed." Though the Hunting Leopard possesses much of the sagacity and fidelity of the dog, its anatomical structure and general habits are undoubtedly feline. The general ground-colour is a bright yellowish brown above, lighter on the sides, and nearly white beneath; marked with numerous small black spots on the back, sides, and limbs; and which are continued along the tail, so closely set as to appear like rings; the tip of the tail is white, as is also the whole of its under surface, with the exception of the rings just mentioned. The ears are short and rounded, marked with a broad black spot at the base, the tip and inside being whitish. The upper part of the head is of a deeper tinge than the rest; from each eye is a blackish line running down to the corners of the mouth, and the extremity of the nose, like that of a dog, is black. The fur does not possess that sleekness which distinguishes the feline race in general, but has a peculiar kind of crispness; and there is very little appearance of a mane, except that the hair is somewhat longer and more crisp along the back of the neck.

This useful and docile species, which it is believed might be reduced to a state of perfect domestication, inhabits the greater part both of Asia and Africa. In India and Persia, where they are employed in the chase, they are carried, chained and hoodwinked, to the field in low cars. When the hunters come within view of a herd of antelopes, the Leopard is liberated, and the game is pointed out to him: he does not, however, immediately dash forward in pursuit, but steals along cautiously till he has nearly approached the herd unseen, when with a few rapid and vigorous bounds he darts on the timid game, and strangles it almost instantaneously. Should he, however, fail in his first efforts and miss his prey, he attempts no pursuit, but returns to the call of his master, evidently disappointed, and generally almost breathless.

Lepadogaster. A genus of small Malacopterygious fishes, which have the power of attaching themselves to rocks and other hard substances, by means of the disc, whereby they are enabled to remain and find their food in situations where every

whose fry he found on opening a scallop, furnishes him with a subject which he treats in a very pleasant and edifying manner: "How wonderfully the Lord teaches the feeblest of his creatures to provide for their own safety and that of their offspring! What a charming nursery this little sucker-fish selects for itself! It is rather nice in its choice. It is not an old, weather-beaten scallop that it takes possession of, but one that is fresh without, and smooth and pure within. After it has entered, it certainly has some way of gluing the valves together, for it is not without difficulty that they can be torn asunder. Neither is it imprisoned, though the apartment is thus shut against intruders; for, closely as the valves cohere, there are some little apertures about the ears of the shell through which it can make its exit with its numerous family, or by which such little creatures as they feed on may, in their simplicity, enter."

LEPAS. A genus of Cirrhipedous animals, of which the Barnacle (*Lepas anatifera*) is a specimen. They adhere in clusters to rocks, shells, floating wood, and other extraneous marine substances, and, being incapable of changing place, are supposed to be true hermaphrodites. The word *Lepas*, in the Linnæan system, contains all the Cirrhipeds, or Multivalves. It was formerly applied to Limpets or Patella: in short, the ancient definition, "Concha petræ adhærens," would apply to any shells attached to rocks. Much may be expected from the researches of Mr. Charles Darwin, F. R. S., into their history. He has just published, in one of the Ray Society's volumes, a minute anatomical and zoological investigation of all the species of Cirrhipeds. [See BALANUS.]

LEPIDOPTERA. An order of four-winged insects, containing some of the largest and most beautiful in nature, and comprehending all those usually ranked as Butterflies, Moths, and Sphinxes. The wings, which vary in size, figure, and position, are covered with a multitude of minute scales,

cloth, wool, furs, feathers, wa
and the like; but by far the g
ber live wholly on vegetable
kinds being exclusively leaf-
others attack the buds, fruits,
pith, stems, and roots of plants
of Lepidopterous insects are w
the name of *Caterpillars*. [Se
and CATERPILLAR.]

So great is the number of Ins
to this order, that Dr. Horme
them to amount to nearly one
whole of the insect tribes. Th
is characterized by several pec
occurring in any of the other o
body is compact, and densely
hairs or scales: the head is fu
received into a frontal prothe
but attached by a narrow lig
furnished at the sides with a
granulated eyes, and its hind
with a pair of ocelli, which
hidden by the thick covering
scales: the antennæ are ins
upper part of the head, and
long and multiarticulate, very
form, and often very compli
males; the mouth, at first sight
consist of a long and delicate
voluted organ, which, when
found to consist of two pieces,
is sometimes provided with a
appendage or palpus at its ba
slender proboscis (or antlia as
Kirby and Spence) is employed
the nectar of flowers, upon w
subsists, into the mouth and st
insect, and which, from its
struction, is admirably adap
trating to the depths of the ne
soms. When at rest, it is co
defended by two large and com
composed of three joints ins
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head." * * * * "The thorax
compact, the prothoracic pos
owing to the fore-legs performi
mental functions, whilst the m
which is attached the anterior

to small and useless appendages: these wings are of large size, and are not folded up; the two fine layers of membrane of which the wings are composed, like the upper and lower surface of a leaf, are kept expanded by a number of longitudinal corneous veins, or nerves, as they have been called." * * * * "The wings in this order offer another peculiarity, since, instead of being naked and transparent, they are clothed with a double layer of minute scales, somewhat resembling those of tiles." These scales, upon which the beauty of these insects so entirely depends, are easily detached in the form of a fine dust, and, when examined under the microscope, are exceedingly variable in their form, but generally more or less wedge-shaped, or oval; sometimes toothed or notched at the broadest end, and having a slender point at the base, by which they are attached upon the membranous surface of the wing, which, when denuded, presents the appearance of numerous minute impressions arranged in lines, in which the base of the scales are planted, being laid upon each other like the tiles on the roof of a house. The number of these scales is very great, there being more than 400,000 on the wings of the silkworm moth, according to Lyonnet; in some species, however, the wings are partially, or even entirely, denuded of scales; and in others, small patches only are thus denuded, as in the great Atlas Moth. In many species, these scales exhibit the most brilliant metallic tints, so that in the bright light of the sun it is almost impossible to look upon them." * * * * "The variations in the colours and markings of the wings are almost as numerous as the species themselves: the sexes also often differ materially from each other; still some general principles are evident in the distribution of these colours and markings. Thus the *Pieris* and *Pieridæ* are almost uniformly white; *Colias* and its allies yellow; the *Vanessa* rich brown, spotted with black and with silvery spots on the under side; *Hipparchia* and its allies ornamented with eye-like marks; the *Lycænæ* copper-coloured; the *Polyommati* fine blue, with small eyes on the under side: the *Zygænæ* with red under wings; the *Noctuidæ* with a wedge-like mark in the middle of the fore wings; the *Geometridæ* with waved carpet-like marks."—We are indebted for the previous extracts to Mr. Westwood's excellent "Introduction to the Classification of Insects." We must refer our readers, who wish to study the subject more particularly, to the works of Dr. Boisduval, Messrs. Doubleday and Hewitson, and others. The recently published Lists of British Species, drawn up with so much study and care by Mr. H. Doubleday of Epping, and by Mr. Stephens (Cat. Lep. in Brit. Mus.) are indispensable to all who study the British species; as British authors, up to his time, have been apt to multiply species, and occasionally to misapply the names, from the want of authentic specimens to compare with their species. More particular information will be found under the different species of Lepidoptera described in the course of the work.

LEPIDOSIREN. A genus placed by some authors among the Fish, by others among the Amphibia: of late it has been the subject of many learned papers, abroad and at home; the best known species is named *Lepidosiren annectens*, and is a native of Africa.

Dr. Melville differs from Professor Owen with regard to the position of this remarkable genus in the Animal Kingdom, as he regards it as a true Amphibian. He rests its character on the absence of the super-occipital bone, the presence of the large epi- and basi-cranial bones, the non-development of the maxillary and intermaxillary bones; and especially the enormous magnitude of the Wernerian bones, which become subservient to mastication, and anchylosed to the expanded terygoids; on the nostril being doubled; on the existence of external cutaneous gills during the adult condition, which did not occur in any fish; and on the co-existence of external and internal gills, with lungs: in other words, on its exhibiting the different modes of circulation, respiration, &c., in the produce—second stage of the larva of the frog and Amphiuma, or Menopoma, and other characters.

One species (about a foot long) inhabits the upper part of the river Gambia; and another (between two and three feet in length) is a native of the large rivers of South America. In its respiratory apparatus, it bears the closest correspondence with the Perennibranchiate Batrachia; but in many other points of its internal structure, it more resembles certain species of fishes. The African species is said to pass nine months out of the twelve in a state of torpidity; burying itself in the mud during the dry season, and again reviving when the sources of the river are swollen by the rains.

LEPIDOSTEUS. A genus of fishes with very bony polished scales, one species of which is found in the United States. Many allied genera are found in a fossil state.

LEPISMA. A Linnæan genus of Apterous insects; distinguished by an elongated body, covered with small scales, frequently silvery and brilliant. They have six feet, run with great velocity, and some of them by means of their caudal appendage are

LEPISMA VITTATA.

enabled to leap. The antennæ are setaceous, and usually very long. Several species hide beneath stones; others conceal themselves in the cracks of old window-frames and under damp boards, &c.

LEPTIDÆ. A subfamily of Dipterous Insects, distinguished by the proboscis being short and membranous; the lips terminal and thick; and the abdomen usually with five distinct segments.

LEPTOCEPHALUS, or ANGLESEA MORRIS. A Malacopterygious fish, characterized by a very small and short head, and a remarkably compressed body. It is common in the seas of hot climates. One specimen of it was taken on the coast of Anglesea by a gentleman named Morris, and is described by Pennant; but since that time many others have been found on our coasts. It is four inches long; head very small; the eyes large; lower jaw slender; numerous small teeth in each jaw; the body compressed sideways; extremely thin, and almost transparent: the bones forming the vertebræ have no spinous processes whatever; the dorsal and abdominal margins, as well as the lateral line, exhibit a series of small black specks; and its general opal-like hue and graceful motions give it a very pleasing appearance. It is usually found among sea-weed.

LEPTOCONCHUS. A genus of Mollusca, found in the Red Sea, where it is imbedded in calcareous masses of Polyperia. The head of the animal is furnished with a proboscis; two tentacula, with eyes in the middle; foot of moderate size, and no operculum. The shell is of a dirty-white colour, subglobular, delicate, fragile, and translucent; spire low; aperture large, and furrowed externally.

LEPTOPHINA. The name given to a subfamily of serpents belonging to the family *Colubridæ*. They are characterized by a long and very slender body, slightly depressed: the head elongated, and narrowed before; and a very long, slender, and acutely pointed tail. "The whole of the serpents composing these genera live," Mr. Bell observes, "in woods, entwining themselves amongst the branches of trees, and gliding with great rapidity and elegance from one to another. Their habits, combined with the graceful slenderness of their form, the beautiful metallic reflection from the surface in some species, and the bright and changeable hues in others, place them among the most interesting of the serpent tribe. Their food consists of large insects, young birds, &c., which the extraordinary size of the head, the width of the gape, and the great dilatability of the neck and body, enable them to swallow, notwithstanding the small size of these parts in a state of rest." They are perfectly harmless; and it is even said that children are in the habit of taming and playing with some of the species, twining them round their necks and arms, and that the snakes appear pleased at being thus caressed.

LEPTOPTILUS. A genus of Grallatorial birds, containing the well known *Adjutant of India* (which see).

LEPTURIDÆ. The third family of *Longicorn* beetles, comprising such as have the eyes rounded, or very slightly emarginate; the antennæ of moderate length inserted before the eyes; the head is inclined downwards, and narrowed into a neck at its union with the thorax, which is conical or trapezoid, and narrower in front than the head; the mandibles are acute at the tips; the elytra are narrowed to the tips, so as to give the terminal part of the body the appearance of an elongated but reversed triangle. These insects are of moderate size, active, and generally gaily coloured, being often ornamented with yellow markings: they are found either upon umbelliferous flowers in the hot sunshine, or on the trunks of trees, where they usually reside in their previous states.

One of the largest and finest of these beetles is a North American species, the *Dorcoceras palliatus*, which appears on the flowers and leaves of the common elder towards the end of June and until the middle of July. It is of a deep violet or Prussian blue colour, sometimes glossed with green, and nearly one half of the fore part of the wing-covers is orange-yellow, suggesting the idea of a short cloak of this colour thrown over the shoulders, which the name *palliatus*, that is, cloaked, was designed to express. The head is narrow; the thorax is narrow before and wide behind, and has a little sharp projecting point on each side of the base. The larvæ live in the lower part of the stems of the elder, and devour the pith, as Dr. Harris informs us. In this country are many species, some of which are rather large and handsome. They are described in the works of Mr. Stephens.

LEPUS. [See HARE.]

LERNÆADÆ. A group of parasitic crustacea; one species of which infests the Sun-fish (*Orthogoriscus*). The fish and its parasite are thus described in Capt. Grey's Travels in Australia: "We caught also a fish (*Orthogoriscus*), which the seamen called a devil-fish. The length of it was six feet two inches; breadth from fin to fin, three feet six inches; length from tip of nose to pectoral fin, two feet; thickness through the breast, one foot six inches. This fish was infested about its nose with a kind of parasite (*Lernea*), having two long thin tails. The sailors stated that these animals frequently cause large sores about the nose of the fish, and that when suffering from this, it will allow the sea birds to sit on it, and peck away at the affected part. The habit of the fish is to swim during calms, with one of the hind fins out of water, and it is then harpooned from a boat. I have myself seen petrels perched upon them; and directly one of these fish was hoisted on board, the sailors looked for the parasites and found them. They were an inch long, and covered with a transparent shell marked with gray spots and lines; the hind part of the body, near the tail, being darker than the fore part, as if the intestines were seated there. These little creatures adhered strongly to any substance that they were laid on, and caused an irritating feeling to the skin, if placed on it; they swam with great rapidity when put

into sea water, and in their movements in swimming much resembled a tadpole; their tails were merely long transparent fibres."

ANTHOCOMA SMITHII

Our figure represents a species, *Anthocoma Smithii*, which derives its generic name from its body resembling the blossom of a flower. In Dr. Baird's British Entomostraca figures and descriptions of the British species are given.

LESTRIS. A genus of Palmipede birds, distinguished from the true Gulls by their membranous nostrils being larger and opening nearer to the point and edge of the beak; the tail also is pointed. The females are larger than the males, which is the reverse of what is observable in the genus *Larus*; and they lay but two eggs, of a dark colour.

LESTRIS PARASITICUS; the ARCTIC GULL. This species is common in the northern parts of Europe, Asia, and America. Numbers of them frequent the Hebrides in the breeding season; and they are also to be seen in the Orkneys, and on the coast of Yorkshire. They make their nest of moss, on the dry grassy tufts in boggy places, and lay two eggs of an ash colour, spotted with black. The length of the Arctic Gull is twenty-one inches: the bill is dusky, pretty much hooked at the end, but the straight part is covered with a sort of cere: the nostrils are narrow, and placed near the end. In the male the crown of the head is black; the back, wings, and tail are dusky; and the whole under side of the body is white: the legs are small, scaly, and black. The female is entirely brown. They are ravenous and ferocious to such a degree, that they pursue other gulls of a less vigorous and determined nature, whenever they observe them to have a prize worth contending for, and compel them to drop or disgorge their prey; which the pursuer usually catches as it falls. Mr. Fisher, in his Journal of a Voyage to the Arctic regions, in H. M. SS. Hecla and Griper (1820), gives the following information on this subject: "Several Arctic Gulls were seen to-day for the first time. This bird is commonly called by our Greenland seamen the Boatswain, and sometimes Dirty Allen, a name somewhat analogous to that by which it is characterized by the Danes, viz. Strondtjager, or Dung-bird. All these names have had their origin from a mistaken notion that these birds lived on the excrements of the lesser gulls, which, on being pursued, either from fear, or to relieve themselves from the persecution of fierce enemies, voided something to satiate the voracious appetites of their pursuers, and by that means escape further molestation. The fallacy of this opinion is now, however, pretty generally known. That the Arctic Gulls do possess these of their own genus which *they* can master (particularly the *Kittiwakes*) is an incontestable fact; but the object of their pursuit is not the excrement, but the prey that the pursued is at that time possessed of, and which at length they are forced to drop, to secure their own safety; which they effect during the time that their enemy is employed picking it up, although that is done in a very short period, for they manage the business with such dexterity, that the object dropped is generally caught before it reaches the water."

LESTRIS CATARACTES; the SKUA GULL. This is the most formidable of all the Gull kind, preying not only on fishes, but also on the smaller kinds of water-fowl, and, as some assert, even on young lambs. It is a stout bird, two feet in length, and between four and five from tip to tip of the extended wings. The bill is dark, strong, much hooked, sharp at the tip, and covered to the nostrils with a kind of cere. The whole upper plumage is of a deep brown, edged with a dull rust colour; the under parts being considerably lighter: the tail is white at the root, the shafts are of the same colour, and the webs of deep brown: the legs and toes are covered with coarse black scales; and the claws are strong and hooked. This fierce species is met with in the high latitudes of both hemispheres, where they are much more common than in the warm or temperate parts of the globe. They are uncommonly courageous in defence of their young, and attack, with eagle-like courage and ferocity, any animal that dares to disturb them; nay, those persons who are about to rob their nests, aware of the reception they are likely to meet with, hold a knife or other sharp instrument over their heads, upon which the enraged bird rushes, to its own destruction. By many people their feathers are preferred to those of the goose; and in some parts they are killed in great numbers merely for the sake of them.

LEUCISCUS. A genus of Malacopterygious fishes, of the genus *Cyprinidæ*. It contains many species, chiefly distinguished from others of the Carp tribe by the comparative shortness of the dorsal and anal fins, and a deficiency of barbules about the mouth. [For examples of this genus, see BLEAK: CHUB: DACE: ROACH, &c.]

LEUCOPHASIA; called by Hübner *Leptoria*. A genus of Butterflies distinguished from the other "*Whites*" by the narrow elongated wings, rounded at the end. There are few species in this genus; we particularize the British

LEUCOPHASIA SINAPIS; or WOOD WHITE BUTTERFLY. In certain woods and copses this insect is to be met with at the end of

WOOD WHITE BUTTERFLY. (LEUCOPHASIA SINAPIS.)

May and beginning of August. Its wings above are milk-white, with a dusky rounded spot at the tip of the anterior, and the base sprinkled with dusky; beneath, the tip and base are yellowish tipped with green: the posterior wings are faintly tinged with yellow and sprinkled with dusky clouds: body cinereous above, white beneath; antennæ white, with black rings. In the female the wings are more rounded. Caterpillar green, with a deep yellow lateral line: it feeds on the *lotus corniculatus*. The Chrysalis is fusiform; greenish with a yellow streak on the sides, and white spots on the stigmata.

LEUCOSIADÆ. A family of Decapod Crustacea, containing many fine round porcellane exotic crabs; the genus *Ebalia* of the British seas belongs to this family.

LEVERET. The young of the Hare during the first year of its age.

LIBELLULA: LIBELLULIDÆ. A genus and family of Neuropterous insects; the distinguishing characters of which are: that the mouth is furnished with jaws; that the antennæ are shorter than the thorax; that the wings are extended; and that the tail is terminated by a kind of forceps. [See DRAGON-FLY: PETALURA.]

LICMETIS. A genus of Scansorial birds found in New Holland: it contains the LICMETIS NASICUS, or LONG-BILLED COCKATOO. This species of the *Psittacidæ* or Parrot tribe, like the common *Cacatua galerita*, assembles in large flocks and spends much of its time on the ground, where it grubs up the roots of orchids and other bulbous plants, upon which it mainly subsists. It not unfrequently makes inroads to the newly-sown fields of corn, where its attacks are most destructive. In confinement they appear dull and morose, and show a very irritable temper. The general plumage is white, washed with pale brimstone-yellow on the under surface of the wing, and with bright brimstone-yellow on the under surface of the tail; line across the forehead and lores scarlet; the feathers of the head, neck, and breast are also scarlet at the base, showing through the white, particularly on the breast; irides light brown; bill white; naked skin round the eye greenish blue; legs and feet dull olive gray. The sexes are alike in size and colour. The female deposits two white eggs on a layer of rotten wood at the bottom of holes in the larger gum trees.

LIMA. A genus of Conchifera, inhabiting a longitudinal shell, almost always white, nearly equivalve, obliquely fan-shaped, and slightly eared; valves gaping near the bosses, which are distant; hinge with a triangular disc between the umbones, divided in the centre by a triangular ligamentary pit, without teeth. The animal makes use of the valves of his shell as natatory organs, working them like fins or paddles, and by this means proceeding at a rapid rate through the water. Two or three species are found on our coasts, and fossil species occurring in lias, inferior oolite, &c.

LIMACINA. A genus of Mollusca belonging to the order *Pteropoda*. It inhabits the northern seas; and is said to be devoured by whales in vast quantities. The shell is

LIMACINA ARCTICA.

thin, fragile, papyraceous, spiral, and obliquely convolute; spiral side rather prominent, the other side umbilicated; aperture large. The body of the animal is long; and it can retire completely into its shell.

LIMAX: LIMACINÆ. A genus and family of voracious naked Molluscs, commonly called Slugs. In most of the terrestrial species of this order there is a prominent head, with four retractile tentacula; and at the end of the longest pair the eyes are situated. The figure of the Limax is oblong, approaching to cylindric. On the back there is a kind of shield or disc, formed by the mantle; and this shield covers the pulmonary sac, the orifice of which is on the right side. They are diffused throughout all climates, particular species being restricted to each; and they are every where regarded as inveterate destroyers of garden produce. [See SLUG.]

LIMENITIS. A genus of Butterflies, one species of which is found in this country.

LIMENITIS CAMILLA; or HONEYSUCKLE BUTTERFLY. This somewhat rare species, which on the Continent is known as *Sybilla*, is noted for the graceful elegance with which it floats along with outstretched wing. Its general colour is a dark brown, spotted with black, the anterior wings having a curved central white band, intersected with black veins, a grayish crescent and three or four small white dots; the posterior wings are very similar, but the white band in the

HONEYSUCKLE BUTTERFLY.
(LIMENITIS CAMILLA.)

centre is oblique and straight; between the fascia and the margin is a double parallel series of obscure black spots: beneath, the anterior wings are brown, clouded with fulvous, and there are several white spots: the posterior wings at the base are a mixture of tawny-orange and bluish-gray, with several black zig-zag lines and dots; then brownish

orange, a white band, a double series of black spots, and a few white dots. The body is dusky black above, white beneath; antennæ black above, tawny beneath and at

LIMENITIS CAMILLA—UNDER SIDE.

the tip. Caterpillar green, with the head and legs reddish; it feeds on the various species of honeysuckle: the chrysalis is green spotted with gold, forked in front. The Honeysuckle Butterfly appears to delight in strolling on the blossoms of the bramble.

LIMOSA. A genus of Wading Birds, frequenting marshes and the sea-shore. They are characterized by a long straight beak, slightly bent at the extremity; and by the external toes, which are long and slender, being palmated at the base. [See GODWIT.]

LIMPET. (*Patella.*) A genus of marine Molluscous animals; the distinguishing characters of which are: that the shell is univalve, of a gibbous shape, almost conical, always fixed to a rock or some hard body; and having its apex sometimes sharp-pointed, at others obtuse; straight, or crooked; whole, or perforated: these variations occasioning so many specific distinctions. The means by which the Limpet affixes

LIMPET AND WHELK.—(PATELLA LONGICOSTA.)

itself to a rock were first clearly explained by Reaumur. The shell approaches to a conic figure; the base of which is occupied by a large muscle, which alone contains nearly as much flesh as the whole body of the fish: this muscle is not confined within the shell, but assists the creature in its progressive motion, or in fixing itself at pleasure. When in a quiescent state, which is commonly the case, it applies this muscle every way round to the surface of some stone, and so firmly attaches itself to it that it is not easily separated even with the assistance of a knife. It is said that crows and other birds which endeavour to detach them for food, are sometimes caught by the points of their bills, and are held there until drowned by the advancing tide.

The Common Limpet (*P. vulgaris*), which is very numerous on the British coasts, has rough prominent striæ, with edges sharply crenated; and the vertex is near the centre. Another species, frequent on the Cornish coast, is called the Transparent Limpet; it has a pellucid shell, longitudinally marked with rows of rich blue spots; and the vertex is placed near one of the edges. But the most beautiful varieties are found on the shores of the Oriental seas and the coasts of the Mediterranean. Limpets are herbivorous, feeding upon sea-weeds, which they reduce with their long riband-shaped tongues.

Many and very opposite opinions have been given to account for the extraordinary tenacity with which this animal adheres to the rock: that which to us appears the most feasible, ascribes the true cause to a viscous juice emitted from the muscle of which we have spoken, which, though imperceptible to the eye, is nevertheless capable of producing these surprising effects. This, it is observed, may be perceived by the touch; for if the finger be applied to the place immediately after the removal of the Limpet from a stone, the tenacity of this juice will be extremely strong; but if any wet touches the stone after the removal of the fish, no viscosity will be perceptible, the whole substance of the glue being instantly dissolved, and its effects totally lost. Water, therefore, is a sufficient solvent for this glue; but the close adhesion of the outer rim of the great circular muscle prevents the external water from acting on it, otherwise it must always be destroyed as soon as discharged. However, the under surface of the body of the animal is entirely covered with small tubercles, containing water, which the creature discharges whenever inclined to liberate itself, and the whole cement immediately dissolves before it.

LIMULUS, or KING-CRAB. A genus of large Crustacea, belonging to the group *Xyphosura* or *Sword-tails*, sometimes attaining the length of two feet. The Limuli are of a very singular form and structure: their bodies are divided into two parts; of which the anterior, covered by a large semicircular shield, bears the eyes, the antennæ, and six pairs of legs, which surround the mouth, and are used both for walking and for mastication; whilst another shield of a somewhat triangular shape covers the posterior portion of the body, which supports five pairs of swimming legs, and terminates in a long pointed process. The Limuli are confined to the shores of tropical Asia, the Asiatic Archipelago, and tropical America. The best known species comes from the Molucca islands: hence they are sometimes termed Molucca crabs. Their habits do not appear to be very well understood: it seems, however, that they prefer the neighbourhood of sandy shores; and it is said that, in order to avoid the violent heat of the sun, which becomes fatal to their existence, they bury

themselves in the sand. The long horny process is used by some of the Malays as a

KING-CRAB.—(LIMULUS MOLUCCANUS.)

point for their arrows; the wounds it makes being dangerous, like those made by the jagged spines of certain fishes.

LING. (*Gadus molva.*) This is a valuable fish of the *Gadidæ* family, or Cod tribe. The body is very long and slender, usually from three to four feet; the head is flat; the teeth in the upper jaw are numerous and very small, while those in the lower are few, long, and sharp; and the lower jaw is

LING.—(GADUS MOLVA.)

shorter than the upper, with a single barbule at its extremity: lateral line straight; scales small; two dorsal fins of equal height; one short near the head; the other long, reaching nearly to the tail, which is rounded at the end. The colour of this fish varies, being sometimes of an olive hue on the sides and back, and sometimes cinereous: the belly is white, as are also the ventral fins, and the dorsal and anal are edged with white: the tail is marked near the end with a transverse black bar, and tipped with white. The Ling is an inhabitant of the Northern seas, and forms in many places a considerable article of commerce. Large quantities are taken among the Western Islands, in the Orkneys, on the Yorkshire and Cornish coasts, and, generally speaking, all round the Irish coast. They spawn in June, depositing their eggs in the soft oozy ground at the mouths of rivers; at which period the males separate from the females. While the Ling continues in season, its liver is very white, and abounds with a fine-flavoured oil; but no sooner does it cease to be in season, than its liver becomes red, and destitute of oil. The same, indeed, happens to the Cod and some other fishes, in a certain degree, but not so remarkably as in the Ling. Besides a certain portion which are consumed fresh, considerable quantities are cured for exportation. The young are called *drizzles*

LINGULA. A genus of Conchifera, found in the Philippine Islands, &c., and constituting a singular anomaly, as being the only bivalve shell that is pedunculated. The animal has two long ciliated arms, which are curled up during repose. Shell thin, either horny or calcareous, equivalve, equilateral, peaked at the apex, and generally open at the base. There are several recent species found in the Moluccas, and some fossils in sandy indurated marl, limestone, &c. *Lingula anatina* is so named from its resemblance to a duck's bill.

LINNET. (*Fringilla linota.*) The Brown or Gray Linnet is a well-known song-bird, being common in every part of Europe. Its length is about five inches and a half, including the bill and tail: the bill is bluish gray; the neck, back, and upper parts of the head, dark reddish brown, the edges of the feathers being pale; under parts dirty reddish white; breast deeper than the rest, sides streaked with brown; quills dusky, edged with white; the tail, which is a little forked, is of a brown colour, edged with white, except the two middle feathers, which are bordered with a dull red: legs short and brown. The female is marked on the breast with streaks of brown: her wings have less of white; and her colours are in general less bright. The Linnet usually

LINNET.—(FRINGILLA LINOTA.)

builds in some thick bush or hedge, preferring the white-thorn and furze; the outside is composed of moss, dry grass, and roots; and the inside of fine soft wool and hair. The female lays four or five eggs, which are white, spotted with blue, and irregularly spotted with brown at the larger end. The young are hatched towards the end of April or beginning of May. The song of the Linnet is lively and sweetly varied; its manners are gentle, and its disposition is docile. When confined with other birds it easily adopts their song, and when taken young it may be readily taught to modulate its voice to any sound to which it is accustomed. But those persons who have paid

most attention to the natural note of this bird must be well aware that its native strains are more delightful than any in which it is capable of being instructed. Linnets, says Bewick, are frequently seen in flocks during the winter; and their assembling with other kinds of small birds is the sure presage of a coming storm. They may be caught in clap-nets during the summer months; but flight-birds are most plentiful about the beginning of October. They feed on various seeds, and are particularly fond of linseed; from which circumstance, it is said, they derive their name.

In alluding to the domestic attachments of some species of birds, the *Journal of a Naturalist* thus speaks of the Linnet: "This songster is no solitary visitor of our dwellings: it delights and lives in society, frequenting open commons and gorsy fields, where several pairs, without the least rivalry or contention, will build their nests and rear their offspring in the same neighbourhood, twittering and warbling all the day long. This duty over, the families unite, and form large associations, feeding and moving in company, as one united household; and, resorting to the head of some sunny tree, they will pass hours in the enjoyment of the warmth, chattering with each other in a low and gentle note; and they will thus regularly assemble during any occasional bright gleam throughout all the winter season,—'and still their voice is song,' which, heard at some little distance, forms a very pleasing concert, innocent and joyous. The Linnet is the cleanliest of birds, delighting to dabble in the water, and dress its plumage in every little rill that runs by. The extent of voice in a single bird is not remarkable, being more pleasing than powerful; yet a large field of furze, in a mild sunny April morning, animated with the actions and cheering music of these harmless little creatures, walled with the bright glow and odour of this early blossom, is not visited without gratification and pleasure."

LION. (*Felis leo.*) This most noble as well as most formidable of all carnivorous animals is chiefly distinguished by the presence of a full flowing mane in the male, and by a tufted tail and the disappearance of the feline markings in both sexes before they arrive at maturity. The Lion is principally an inhabitant of the interior wilds of Africa, but is also found, though far less plentifully, in the hotter regions of Asia.

It is in Africa, however, that he reigns supreme among the weaker quadrupeds, and exerts his power to the greatest extent. A Lion of the largest size has been found to measure about eight feet from the nose to the tail, and the tail itself about four feet: the general colour is a pale tawny, still paler or more inclining to white beneath: the head is very large, the ears rounded, the face covered with short or close hair; the upper part of the head, the neck, and shoulders coated with long shaggy hair, forming a pendent mane; on the body the hair is short and smooth; and the tail is terminated by a tuft of blackish hair. The Lioness is smaller than the Lion, has no mane, and is of a whiter cast beneath. During the day the Lion usually slumbers in his retreat; and as night sets in, he rouses from his lair, and begins his prowl. Being of the cat tribe, his eyes are incapable of bearing a strong light; the night is therefore his proper time for action.

Much has been written respecting a sharp prickle, or corneous process, concealed in the tuft of hair at the extremity of the Lion's tail, with which he was said to lash himself when angry, or to arouse his dormant rage. Homer, Lucan, and Pliny had so described him: but though they appeared to have no doubt of his lashing his sides with that object, they did not advert to this peculiarity of caudal structure. Didymus Alexandrinus,

SKULL OF LION

a commentator on the 'Iliad,' however, having found a black horny prickle among the hair of the tail, immediately conjectured that he had ascertained the true cause of the stimulus when the animal flourishes that member in defiance of his enemies. The subject afterwards remained unnoticed for centuries, till at length Blumenbach verified the fact of its existence, although he did not admit that it could produce the effect attributed to it by the ancient scholiast. He remarked, indeed, that the tail was terminated by a horny prickle, surrounded at its base by an annular fold of the skin, and so buried in the tuft of hair that its use for the purpose stated could only be imaginary. Since that time it has been clearly proved, by the examination of Lions, both living and dead, that there is occasionally present at the extreme tip of the tail, a horny prickle, scarcely three-eighths of an inch in length, which is altogether unconnected with the

caudal vertebræ, and easily detached from the skin; what its real use may be is purely conjectural, but that the animal is furnished with it in order to incite him to anger cannot for a moment be entertained. We should here observe, that in one of the *bas reliefs* discovered, through the laudable zeal of Sir

FOOT OF LION, DISSECTED, TO SHOW THE MUSCLES WHICH MOVE THE RETRACTILE CLAWS.

Stratford Canning, in the excavations of Nimroud (the supposed site of the ancient city of Nineveh), and now in the British Museum, an *exaggerated* representation of this "prickle" is very apparent. From this it is certain that the fact of its existence was perfectly established in the time of the Assyrians, or it would not have been prominently introduced in the figure of the sculptured Lion.

When in quest of prey his roaring resembles the sound of distant thunder, and, being re-echoed by the rocks and mountains, appals and puts to flight every animal within hearing. In general, however, he waits in ambush, or creeps insidiously towards his victim; and then, springing on it with a tremendous bound, he seizes it with his powerful claws. His strength is prodigious: a single stroke of his paw, it is affirmed, is sufficient to break the back of a horse; and his strength is such as to enable him to carry off a buffalo or antelope, with as much apparent ease as a cat carries off a rat. The Lion is supposed to be destitute of a fine scent, and to hunt by the eye alone: he will devour as much at one time as will serve him for two or three days; and, when satiated with food, he is said to retire to his den, which he seldom quits, except for the purpose of prowling about for his prey. His teeth are so strong, that he breaks the bones with perfect ease, and often swallows them together with the flesh: his tongue, as in other feline animals, is furnished with reversed prickles, but they are so large and strong in the Lion as to be capable of lacerating the skin: the muscles which raise the jaw are of enormous size; and those which support the head, as well as the *ligamentum nuchæ* which runs along the spinous processes of the vertebræ to the occiput, are very highly developed. The Lioness is said to go with young five months, and to produce but one brood in the year: the young are generally from two to four in number, which the parent nurses with great assiduity, and

attends in their first excursions for pre
it is remarked that in a state of ea
she usually becomes very savage as
she becomes a mother.

From the writings of ancient histo
appears very clear that Lions were
time found in Europe, but they hav
since totally disappeared. They are
longer seen in Egypt, Palestine, or
where they once were evidently fa
uncommon; and, as Cuvier remark
in Asia generally, with the except
some countries between India and
and some districts of Arabia, they ha
come comparatively rare. Nor is thi
wondered at, when we reflect on th
stantly increasing numbers of the
race, the superior advantages given
by the arts of civilization, and, ab
the destruction which is caused by
fire-arms against them, instead of th
and the arrow. "His true country,"
Bennett observes, "is Africa, in the v
untrodden wilds of which, from the in
deserts of the north to the trackless fo
the south, he reigns supreme and
trolled. In the sandy deserts of Ar
some of the wild districts of Persia,
the vast jungles of Hindostan, he still
tains a precarious footing; but fro
classic soil of Greece, as well as fr
whole of Asia Minor, both of which wa
exposed to his ravages, he has been
dislodged and extirpated." How di
was it in the time of the Romans!
with the magnificent appearance o
animals, they imported them in vast n
from Africa, for their public spe
Quintus Scævola, according to Pliny
the first in Rome who exhibited a co
Lions; but Sylla the dictator, dur
prætorship, exhibited a hundred Lion
him, Pompey the Great produced no le
six hundred in the grand circus; and
the dictator four hundred. Mark A
appeared in the streets of Rome in a
drawn by these noble animals, accom
by his mistress Cytheris, an actress fr
theatre; a sight, says Pliny, that su
in enormity even all the calamities
times.

"The general prey of the African
Mr. Broderip observes, "consists of th
herbivorous quadrupeds, very few of
it is unable to master; and it is a
scourge to the farmer, who is conse
ever on the look-out for Lions, and ge
a most imperturbable and unerring
Though mortal accidents frequently
in these huntings, the cool sportsman
fails of using his rifle with effect.
when roused, it seems, walk off qui
first, and if no cover is near, and th
not pursued, they gradually mend the
to a trot, till they have reached
distance, and then they bound away.
demeanour upon these occasions ha
described to us by eye-witnesses to
careless description, as if they did no
a fray, but, if pressed, were ready to
out. If they are pursued closely, th
and couch, generally with their face
adversary; then the nerves of the eye

are tried. If he is collected and master of his craft, the well-directed rifle ends the scene at once; but if, in the flutter of the moment, the vital parts are missed, or the ball passes by, leaving the Lion unhurt, the infuriated beast frequently charges on his enemies, dealing destruction around him. This, however, is not always the case; and a steady unshrinking deportment has, in more instances than one, saved the life of the hunter."

The distinctions which some naturalists have pointed out as existing between the African and Asiatic Lions have been altogether denied by Buffon, with whom Cuvier appears to coincide. On the other hand, modern writers, who have lately paid great attention to the subject, state that the African Lion is larger, has a more regular and graceful form, is generally of a darker colour, and has a less extensive mane. The African varieties are, 1. The *Barbary Lion*, which is described as having a deep yellowish brown fur and a full flowing mane: 2. The *Senegal Lion*, the fur of which is of a brighter yellow tint, and the mane thinner: 3. The *Cape Lion*, of which there are two varieties, one brown, the other yellowish; the former being the most powerful and furious. The Asiatic varieties are generally distinguished as the *Bengal Lion*; the *Persian* or *Arabian Lion*; and the *Maneless Lion* of Guzerat; the last of which appears to be limited to a comparatively small district. There is also the *Puma*, or *American Lion*; a description of which will be found in its proper alphabetical position: but that animal, it should be observed, is destitute of several of the distinguishing characters of the true Lion, and is not entitled to the appellation.

We would willingly, if space permitted, insert some of the stirring narratives which recent travellers have given of Oriental Lion hunts; our readers must, however, be content with a brief notice, which we copy from the excellent publication last quoted:—"The habits of the Asiatic Lions do not differ much from those of Africa, excepting that the former, from the state of the country, frequent the jungles. In India the elephant is generally employed in the chase which is now now conducted with more pomp and circumstance than in Africa. The grand Asiatic huntings of former times, those of Genghis Khan for instance, will occur to many of our readers. The accounts of most Asiatic modern sportsmen give a most courageous bearing to the Lions in these encounters. One of these states that the Lions in India, instead of running away when pursued through a jungle, seldom take to cover as a refuge at all. On the approach of their enemies, they spring out to meet them open-mouthed in the plain. They are thus easily shot; but if they are missed or only slightly wounded, they are most formidable adversaries. They are even said to have sprung on the heads of the larger elephants, and to have fairly pulled them to the ground, riders and all."

The mane and tuft on the tail of a Lion are not fully developed till the animal is six or seven years old; and the natural period of a Lion's life is generally supposed to be about twenty-two years; but instances are on record which show they have sometimes attained the "age of man."

LION-LIZARD. The name applied by Catesby in his Natural History of Carolina to the Basilisk (*Basiliscus Americanus.*)

LITHODOMUS. A Molluscous animal inhabiting a bivalve shell, oblong, almost equally rounded at both ends, and the summits very near the anterior. They at first suspend themselves to stones, like the common Mussels, but then they perforate them,

STONE-BORER.
(LITHODOMUS LITHOPHAGUS.)

and bury themselves in the excavations, whence they cannot issue. Cuvier says, that when young, the Lithodomus suspends itself to rocks by a byssus, but, as it grows, it pierces a hole, and introduces itself, forming a cavity which thenceforward it never leaves: indeed, after a short time, as it merely enlarges the interior, without making the entrance any wider, its increasing bulk renders it unable to quit its cell, and in such cases the byssus dies away.

LITHOPHAGIDÆ. A family of the order Conchifera Dimyaria, consisting of terebrating bivalves, gaping anteriorly, and having no accessory valves.

LITHOTRYA. A genus of Molluscous animals, allied to the family of Pedunculated Cirripedes, inhabiting an irregularly shaped pyramidal shell, consisting of eight unequal pieces; having at the base an irregularly cap-shaped appendage, like the inverted shell of a Patella, and to which the lower part of the peduncle is affixed. The genus derives its name from the power possessed by the animal of making dwelling holes in stones or pieces of rock.

LITTORINA. A genus of Mollusca found on the sea-shores in all parts of the world, feeding upon sea-weed. They inhabit a turbinated, thick shell, consisting of few whorls; spire acuminated; columella rather flattened; operculum, horny, spiral, with rapidly increasing volutions. The common Periwinkle is a specimen of this genus.

LIZARD. (*Lacerta.*) A group of Reptiles, which not only differ from every other class of animals, but they also vary widely from each other. With respect to size, the ranks of no class of beings are so opposite: contrast the gigantic and ferocious Crocodile with the inoffensive Chameleon; or the monstrous Saurian reptiles, whose fossil remains excite the wonder of all beholders, with the harmless little Lizard of our walls and copses! They

too in colour greatly, and they differ derably in form. But the principal tinction between the Lizard species arises the manner of bringing forth their ng. Some are viviparous; others emit ir spawn like fishes. The Crocodile, the iana, and all the larger kinds, produce gs, which are hatched by the vivifying at of the sun; the animals that issue from em are complete on leaving their shells, d their first efforts to run are in order to secure subsistence in their native element. The viviparous kinds, in which are all the alamanders, are produced from the bodies of the females perfect and active, and undergo no future change; but those which are bred in the water, and, as is generally supposed, from spawn, suffer a very considerable change in their form; being generated with external skins or coverings, which sometimes enclose their feet, and give them a serpentine appearance. To these adscititious skins fins are superadded above and below their tails, which assist the animals in swimming; but when the false skins drop off, these likewise disappear; and then the Lizards, with their four feet, are completely formed, and exchange the water for the land. The most important of all these will be found described in other parts of this volume; and we shall therefore have to consider in this place those only which are denominated *Lacertidæ*, or True Lizards, which are bright-eyed, active, slender little animals, adorned with brilliant colours, and whose aspect and manners have nothing repulsive about them.

The GREEN LIZARD. (*Lacerta agilis.*) This elegant species, which is found in all the warmer parts of Europe, and seems pretty generally diffused throughout the Old Continent, is from ten to fifteen inches in length; exhibiting a rich and varied mixture of darker and lighter green, interspersed with spots and marks of yellow, brown, &c. The head is green, covered with large angular scales; the rest of the upper parts with very small ovate ones; the tail, which is commonly much longer than the body, is marked into very numerous scaly rings;

GREEN LIZARD.—(LACERTA AGILIS.)

and the under part of the animal, both on the body and limbs, is of a pale blue-green cast; beneath the throat is a kind of collar, formed by a row of scales much larger than the rest; the abdomen and under surface of the limbs is likewise covered with scales; the tongue is moderately long, broad at the base, lifid towards the tip, and covered on its broad part with numerous rows of minute sharp papillæ pointing backwards, and thus the better enabling the animal to retain and swallow its prey, which consists chiefly of insects, small worms, &c. The Green Lizard is found in various situations, in gardens, about warm walls, buildings, &c. It is extremely active, pursuing its insect prey with great celerity, and readily escaping from pursuit when disturbed. If taken, however, it soon becomes familiar, and to a certain degree may even be tamed; for which reason it is regarded with favour in many countries. It appears to run into many varieties both as to size and colour, but in all these states the particular characteristics of the species are easily ascertained.

The VARIEGATED LIZARD. (*Tejus teguixin.*) The colour of this large species is highly beautiful, consisting of an elegant variegation of brown, blackish, and purple spots, on a pale bluish-white, and, in some parts, yellowish ground. The head is covered, as in the Green Lizard, with large scales or plates; the body with small scales, so disposed as to mark the sides into numerous tapering annuli or strias; and the tail, which is very long, is surrounded by extremely numerous rings of small square scales, and tapers to a slender point. The head is rather longer and more tapering than that of the Green Lizard; the tongue is broad, flat, long, forked at the tip, and curiously striated on each side. Native of South America.

The VIVIPAROUS LIZARD. (*Zootoca vivipara.*) As its name imports, this reptile is produced alive. It frequents thickets, heaths, and sunny banks; and several are often seen in such situations basking in the summer sun, and watching for their insect prey. They burrow in the ground, and retreat to their hiding-places on the slightest alarm. The average length of this species is about six inches.

We have specified three species of this group, and others will be found scattered throughout this work. Lizards are so numerous in genera and species that we must refer our readers and those who are desirous of making further acquaintance with them to the elaborate and admirable descriptive Catalogue of Lizards in the British Museum, by J. E. Gray, F.R.S., a goodly volume of nearly 300 pages.

LIMNORIA. A genus of Isopodous Crustacea, in which the head is as broad as the first segment of the body, and the eyes ga

LIMNORIA TERREDINIS.

...d. The only known species (*L. lig-*...) is like a small wood-louse in general ...ance. It is of an ash-colour, with black ... It was first discovered in Britain by ...wenson, the builder of the Bell Rock ...house, who found it exceedingly de-...ive to the wood-work necessary in lay-...e foundations of that useful structure, ... it perforated in every direction. It ...nd in other parts of the British and ...coasts, and has even attracted notice ...ance by its perforating ravages into ...en piles, piers, jetties, and other struc-... embedded in the sea. The small ...by the side of the figure denotes the ...al size of this Lilliputian but destruc-...isopode. [See CHELURA.]

...THOSIIDÆ. This family of Hetero-...s Lepidoptera is of small extent, and ...pecies are weak and inactive; the body ...nder; the antennæ are slender and se-...us; the mouth considerably developed, ...maxillæ being long and spiral, and the ...l palpi of moderate size, and three-...ed; the thorax is not crested; and the ...s are comparatively of delicate struc-..., and elongated. The brilliant colours ...ms of these insects would seem to in-...te that they flew by day; but the con-...y is the case, and their flight is short and ...le. The larvæ are cylindrical, often ...what hairy, with six pectoral, eight ...ral, and two anal feet: they are solitary ...heir habits, and never reside either in a ... or in a general tent-like web. There ...several exotic species of this family which ...very splendid. The species of the genus ...ous found in this country are very ...ber in colour.

...LAMA, or GUANACO. (*Auchenia gla-*...) This animal bears a strong resem-...ce to the Camel in form and structure, ... is much inferior in size. It is a native ...South America, and is particularly plen-...l in Peru, where it inhabits, in a wild

...LAMA.—(AUCHENIA GLAMA.)

...ain, the highest and coldest parts of moun-...ns, feeding in numerous herds, and flying ...with great rapidity at the sight of man. ...The ancient Peruvians, however, completely ...ubdued and domesticated it as a beast of ...burthen, and to them it answered the same ...purpose as the camel and dromedary of ...the old continent. *The general size of the* Llama is nearly that of a stag, or about four feet and a half in height, and six feet in length: the neck is very long, and habitually upright; the head is small; the eyes large and brilliant; the lips thick; and the ears long and movable: the haunches are slightly elevated; and on the breast is a branch which constantly exudes a yellowish oily matter. Its general colour is a light brown, the under parts being whitish; and sometimes it is said to be varied or patched with darker and lighter shades on different parts, and to have a black stripe running down the back. The tail is about five inches long, small, straight, and slightly curved downwards. The hoofs are divided, and terminated by small horny appendages, rounded above, and on either side somewhat curved. It has no upper cutting teeth. In the wild animal the hair is long and shaggy; in the domesticated smoother and closer. It requires no care or expense with respect to attendance or provision for its sustenance; it is satisfied with vegetables, requiring neither corn nor hay; and it even exceeds the camel in its abstinence and endurance of thirst. The voice of the Llama resembles the shrill neighing of the horse. It is naturally patient and enduring; but when angry or attacked, it strikes with its feet, and ejects from its mouth a quantity of saliva, which is said to be of so caustic a nature as to inflame the skin and produce slight eruptions. When the Spaniards invaded South America, it was kept in immense numbers for the purposes of traffic, and also for food; its skin, also, was prepared as leather, and its wool spun and manufactured into cloth. Immense numbers were constantly employed in the transport of ore from the mines; the ordinary load of each Llama was about 100 lbs., and its rate of travelling with this burthen over rugged mountain passes was from twelve to fifteen miles a day. At the present time, however, the horse, the ass, and especially the mule, which have been introduced from Europe, have very generally superseded the Llama as beasts of burthen; whilst the introduction of the sheep, the goat, and the ox, has rendered it less necessary as affording either food, leather, or wool. The fleece of the *Guanaco*, the name usually given to the *wild* Llama, is longer than that of the domesticated animal, and is in much request for the manufacture of many woollen cloths of a delicate texture.

LOACH, or LOCHE. (*Cobitis barbatula.*) A small fish, often found secreted under stones in small, shallow, clear streams, and which swims rapidly away when disturbed

LOACH.—(COBITIS BARBATULA.)

by moving the stone. It seldom exceeds four inches in length; has six barbules about the mouth; feeds on worms and aquatic in-

districts, however, it has been much persecuted, and has become so shy and distrustful as to obtain the name of the Alarm Bird, from its rising high in the air and screaming at the approach of every intruder. It is distinguished by a beautiful primrose-coloured wattle, with which the colouring of the bill and the bold eye closely assimilate; the head, back of the neck, and sides of the chest, are black; back, wing-coverts, and scapularies, dark grayish-brown; primaries black; tail white, crossed near the extremity by a broad band of black; tarsi purplish red; scales black; spur yellow. The colours of the plumage are strongly contrasted; and, taken altogether, it is one of the most beautiful of the Plovers yet discovered. "While on the wing," Mr. Gould observes, "it has much of the carriage of the common European Pewit (*Vanellus cristatus*), but a decided difference is observable in its mode of running, and in its more bold and attractive manners."

LOBSTER. (*Homarus vulgaris*). A crustaceous animal, belonging to the sub-order MACROURA, or *long-tailed Decapods* (but constituting a species of *Cancer*, or crab, in the Linnæan system). Lobsters are found in great plenty about many of the European shores; their general habitation being in the clearest waters, about the foot of such rocks as impend over the sea. The colour of this animal alive is a fine bluish black, beautifully variegated with paler spots and clouds: it has a smooth thorax; a short serrated snout; very long antennæ, and between them two shorter bifid ones. The claws and fangs are large, the greater being tuberculated, and the lesser serrated on their interior edges: it has four pair of legs; the tail has six joints; and the caudal fin is rounded. The two great claws of the Lobster constitute its instruments of provision and

minute crevices of the rocks a
apertures; and in a few week
hard, firm shells, which furni
with defensive and offensive a

Like the crabs, they change
covering annually; previous
cess they appear sick, languid,
no longer laboriously harrowin
or hunting for their prey, but
and motionless, as if in anxio
of their approaching fate.
the new shell in about three
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party generally leaves one o
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behind with garbage; they are then attached to a cord thrown into the sea, and their stations marked by means of buoys. Lobsters are esteemed a very rich and nourishing aliment; and they are generally in their best season from the middle of October till the beginning of May. There are several varieties; with some differences in the claws, the size, and the places of resort, but few in the habits or conformations.

LOBSTER MOTH. [See Stauropus.]

LOCUSTS. (*Locustidæ.*) These noxious insects, whose numbers and voracity constitute one of the severest pests of the hotter regions of the globe, are classed with the Grasshoppers by Linnæus, under the genus *Gryllus*; but more modern entomologists have applied the term *Saltatoria* to them, on account of the power of leaping which the species possess; and in this instance, as in many others where the scientific names of genera and subgenera (of insects in particular) differ, some unavoidable confusion exists. They have coloured elytra, and large wings, dispersed when at rest in straight folds, covered by the long narrow wing-cases, and frequently exhibiting blue, green, or red colours: the antennæ are short; the feet have only three joints; and the hind legs are long, strong, and formed for leaping.

The most celebrated species is the Migratory Locust (*Gryllus migratorius*), which, of all the animals capable of injuring mankind, seem to possess the most dreadful power of destruction. In Syria, Egypt, and almost all the south of Asia, these insects make their appearance in legions, and carry

MIGRATORY LOCUST.
(GRYLLUS MIGRATORIUS.)

desolation with them, in a few hours changing the most fertile provinces into barren deserts, and darkening the air by their numbers. This formidable Locust is generally of a brownish colour, varied with pale red, and the legs are of a bluish cast. Happily for mankind, this awful visitation is not frequently repeated; for they are often not only the precursors of famine, but, when they die, the putrefaction which *arises from their innumerable number is so great, that* it is justly regarded as the cause of some of those desolating pestilences which almost depopulate whole districts of country. Mr. Barrow, in his "Travels," states, that in the southern parts of Africa the whole surface of the ground might literally be said to be covered with them for an area of nearly 2000 square miles. When driven into the sea by a north-west wind, they formed upon the shore for fifty miles a bank three or four feet high, and when the wind was south-east the stench was so powerful as to be smelt at the distance of 150 miles; the air, in short, became poisoned by their fetid exhalations. Mr. Darwin, in his "Researches," has the following graphical description of a swarm of Locusts, closely resembling the species (*Gryllus migratorius*) which he saw in South America, in 1835. It was at the passage of the Cordilleras, near the village and river of Luxan. "Shortly before we arrived at this place, we observed to the southward a ragged cloud of a dark reddish-brown colour. For some time, we had no doubt but that it was thick smoke proceeding from some great fire on the plains. Soon afterwards we found it was a pest of locusts. The insects overtook us, as they were travelling northward, by the aid of a light breeze, at the rate, I should suppose, of ten or fifteen miles an hour. The main body filled the air from a height of twenty feet, to that, as it appeared, of two or three thousand above the ground. The noise of their approach was that of a strong breeze passing through the rigging of a ship. The sky seen through the advanced guard appeared like a mezzotinto engraving, but the main body was impervious to sight; they were not, however, so thick but that they could escape from a stick moved backward and forward. When they alighted they were more numerous than the leaves in a field, and changed the green into a reddish colour: the swarm having once alighted, the individuals flew from side to side in any direction. Of course this swarm cannot even be compared to those of the Eastern world, yet it was sufficient to make the well-known descriptions of their ravages more intelligible."

But to recount the various devastations which these famished insects have at different times occasioned, would be endless. They have several times visited Poland and the south of Europe in amazing numbers; and instances have been known of their reaching our own coasts: happily for us, however, the cold and humidity of the climate are by no means favourable to their production.

One of the largest Locusts known is the *Gryllus cristatus* of Linnæus, a highly beautiful species; being of a bright red, with the body annulated with black, and the legs varied with yellow: the upper wings marked alternately with dark and pale green; the lower with transverse wavy streaks: its length is about four inches; and the expanse of wings when fully extended about seven and a half. These, with other large *kinds*, are made use of in some parts of the *world* as an article of food; and sold, both

fresh and salted, in the markets of some parts of the Levant. Hasselquist, alluding to the passage in the New Testament in which John the Baptist is said to have fed on Locusts and wild honey, thus expresses himself: "They who deny insects to have been the food of this holy man, urge that this insect is an unaccustomary and unnatural food; but they would soon be convinced to the contrary, if they would travel hither, to Egypt, Arabia, or Syria, and take a meal with the Arabs. Roasted Locusts are at this time eaten by the Arabs, at the proper season, when they can procure them; so that in all probability this dish had been used in the time of St. John." He further says, that when corn is scarce the Arabians grind the Locusts in handmills, or pound them in stone mortars, and bake them as bread; that he has frequently seen Locusts used by the Arabians, even when there was no scarcity of corn; but then they stew them with butter, and make them into a kind of fricasee, the flavour of which is by no means disagreeable. Later travellers have fully confirmed these remarks. We may accordingly see the folly of that dispute among Divines about the nature of St. John's food in the wilderness—some maintaining that the word in the original text means the fruit of a certain tree; others that a species of bird is intended, &c.; while those who adhered to the *literal* meaning were the only ones who were both consistent and orthodox.

To give a description of the various species of Locusts, would extend this article to an unreasonable length, and at the same time afford but little of useful information: it may be necessary, however, to show how the three large groups or genera may be distinguished from each other:—*Acrydium*. (Spine-breasted Locusts.) The thorax and wing-covers of ordinary dimensions; a projecting spine in the middle of the breast; and a little projecting cushion between the nails of all the feet. 2. *Locusta*. (Locusts proper.) The thorax, and usually the wing-covers also, of ordinary dimensions; no projecting spine in the middle of the breasts; cushions between the nails of the feet. 3. *Tetrix*. (Grouse Locust.) The thorax greatly prolonged, tapering to a point behind and covering the whole of the back to the extremity of the abdomen; wing-covers exceedingly minute, consisting only of a little scale on each side of the body; forepart of the breast forming a projection like a cravat or stock, to receive the lower part of the head: no spine in the middle of the breast; no cushions between the nails.

"In the South of France," says Dr. Thaddeus Harris, "the people make a business, at certain seasons of the year, of collecting Locusts and their eggs, the latter being turned out of the ground in little masses cemented and covered with a sort of gum in which they are enveloped by the insects. Rewards are offered and paid for their collection, half a franc being given for a kilogramme (about 2 lb. 3½ oz. avoirdupois) of the insects, and a quarter of a franc for the same weight of their eggs. At this rate twenty thousand francs were paid in Marseilles, and twenty-five thousand in Arles, in the year 1613; in 1824, five thousand five hundred and forty-two, and in 1825, six thousand two hundred francs were paid in Marseilles. It is stated that an active boy can collect from six to seven kilogrammes (or from 13 lb. 3 oz. to 15 lb. 7 oz.) of eggs in one day. The Locusts are taken by means of a piece of stout cloth, carried by four persons, two of whom draw it rapidly along, so that the edge may sweep over the surface of the soil, and the two others hold up the cloth behind at an angle of forty-five degrees. This contrivance seems to operate somewhat like a horse-rake, in gathering the insects into winrows or heaps, from which they are speedily transferred to large sacks. A somewhat similar plan has been successfully tried in this country (United States of America), as appears by an account published in the "New England Farmer." It is there stated that, in July, 1826, Mr. Arnold Thompson, of Epsom, New Hampshire, caught, in one evening, between the hours of eight and twelve, in his own and his neighbour's grain-fields, five bushels and three pecks of grasshoppers, or more properly locusts. His mode of catching them was by attaching two sheets together, and fastening them to a pole, which was used as the front part of the drag. The pole extended beyond the width of the sheets, so as to admit persons at both sides to draw it forward. At the sides of the drag, braces extended from the pole to raise the back part considerably from the ground, so that the grasshoppers could not escape. After running the drag about a dozen rods with rapidity, the braces were taken out, and the sheets doubled over; the insects were then swept from each end towards the centre of the sheet, where was left an opening to the mouth of a bag which held about half a bushel; when deposited and tied up, the drag was again opened and ready to proceed. When this bag was filled so as to become burthensome, (their weight is about the same as that of the same measure of corn,) the bag was opened into a larger one, and the grasshoppers received into a new deposit. The drag can be used only in the evening, when the grasshoppers are perched on the top of the grain. His manner of destroying them was by dipping the large bags into a kettle of boiling water. When boiled, they had a reddish appearance, and made a fine feast for the farmer's hogs."

LONGICORNES; or LONGICORN BEETLES. The name given to a tribe of coleopterous insects, or beetles, which are readily distinguished by the great length of the antennæ, and by the first three joints of the tarsi being furnished with a brush. The larvæ mostly reside in the interior of trees, or under the bark; and are either wholly destitute of feet, or have them very small. Both in their larva and perfect state, but particularly in the former, they do much injury to vegetation. Some of the tropical species are brilliantly coloured; and some are remarkable for exhaling an agreeable musky odour.

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timber, there can be no doubt
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NES. Cuvier's name for a
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g, their powers of flight pro-
eat, and their habits entirely
beak is hooked at the top, and
is wanting. The *Albatross*
xample.

TRES. The name given by
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and genera, and distinguished
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E. A tribe of spiny-finned
uished by the bones of the
so elongated as to form a sort
ich the pectoral fins are sup-
Lophius piscatorius, or Angler,
this family.

[See ANGLER.]

ANCHII. An order of osseous
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isposed in pairs, and arranged
nchial arches. They are also
guished by having their body
hields or small plates, which
an angular form. [See PIPE-

ORUS, or IMPEYAN PHEA-
dia also called MONAUL. A
ceous birds, belonging to the
, having the head surmounted
he feathers in the male being
ngated. The tail is *large and*
verts *short; the male is of the*
most brilliant coloured plumage. The circumference of the eye and the cheeks are destitute of feathers: the upper mandible overhanging the under one very much, a structure which is very important to this bird, as it enables it to root up bulbs, upon which it chiefly feeds. The best known species, which was named after Sir Elijah Impey by Dr. Latham (*L. Impeyanus or refulgens*), seems to be common in the Himalaya mountains; and a pair, in May, 1847, were brought alive to this country. The crest and the greater part of the plumage of the back in the male is composed of the most beautiful and resplendent colours, reflecting various hues of gold, copper, sapphire, and emerald. The tail is of a reddish chestnut; the rump white. The female and young are brown, varied with gray and tawny yellow. It is to be hoped that this fine species may be domiciled in this country. It can easily be brought down to the plains of India, but, from the great heat, it seldom long survives.

LORIS. (*Loris* or *Stenops*.) A genus of Quadrumanous animals, allied to the Lemurs. They have a short muzzle, slender

SLOW-FACED LEMUR.
(LORIS TARDIGRADUS.)

body, no tail, large approximating eyes, and rough tongue. Two species only are known, both of which are natives of the East Indies, the SHORT-LIMBED LORIS (*Lemur tardigradus*), and the SLENDER LORIS (*Lemur gracilis*): the latter is remarkable for the disproportionate length of its limbs, and especially of its fore-arms. They are nocturnal and arboreal in their habits; they subsist on insects, occasionally on small birds or quadrupeds, and have an excessively slow gait. During the day they sleep clinging to a branch: at night they prowl among the forest boughs in quest of food. Nothing can escape the scrutiny of their large glaring orbs, or the tenacity of their grasp; and when they have marked their victim, they cautiously and noiselessly approach it till it is within their reach.

"The genus *Loris*," Mr. Bennett observes, in his 'Gardens and Menagerie of the Zoological Society,' "forms part of that division of the Quadrumanous order which is essentially distinguished by an unequal number or irregular disposition of the incisor teeth in the two jaws; terminal nostrils with sinuous openings; and a long subulate or sickle-shaped claw upon the fore-finger of the hinder hands, all the rest of the nails being flat and rounded like those of the

greater part of the monkeys and of man. The Loris differs from the other genera of this family in having four incisors in the upper jaw, placed in pairs with a vacant space between, and six in the lower, directed obliquely forwards; canines of moderate

SLENDER LORIS AND PART OF SKULL.
(LORIS GRACILIS.)

size; twelve molars above and ten below; a short rounded head, and little or no tail. * * * In addition to these primary characters, the Loris are distinguished by large prominent eyes, placed in front of the head and at no great distance from each other; short ears, scarcely rising through the hair with which they are invested, a rough tongue; nostrils projecting beyond the mouth and surrounded by a naked muzzle; and thumbs widely separated from the fingers, both on the fore and hinder hands."

Little is known of the habits of the Loris in a state of nature; but the following description of one in confinement is from the pen of Sir W. Jones: "In his manners he was for the most part gentle, except in the cold season, when his temper seemed wholly changed: and his Creator, who made him so sensible of cold, to which he must often have been exposed even in his native forests, gave him, probably for that reason, his thick fur, which we rarely see on animals in these tropical climates: to me, who not only constantly fed him, but bathed him twice a week in water accommodated to the seasons, and whom he clearly distinguished from others, he was at all times grateful; but when I disturbed him in winter, he was usually indignant, and seemed to reproach me with the uneasiness which he felt, though no possible precautions had been omitted to keep him in a proper degree of warmth. * * * * From half an hour after sunrise to half an hour before sunset he slept without intermission, rolled up like a hedgehog; and, as soon as he awoke, he began to prepare himself for the labours of *his* approaching day, licking and dressing himself like a cat, an operation which the flexibility of his neck and limbs enabled him to perform very completely: he was then ready for a slight breakfast, after which he commonly took a short nap; but when the sun was quite set, he recovered all his vivacity. His ordinary food was the sweet fruit of this country; plantains always, and mangoes during the season; but he refused peaches, and was not fond of mulberries, or even of guavas: milk he lapped eagerly, but was contented with plain water. In general he was not voracious, but never appeared satiated with grasshoppers, and passed the whole night, while the hot season lasted, in prowling for them.

LORY. A name given to several birds of the Parrot tribe, from their frequently repeating the word. They are remarkable for their brilliant colours, dense soft plumage, and comparatively feeble beaks. They are

BLACK-CAPPED LORY.
(LORIUS PHILIPPENSIS.)

very active and gay, even in captivity. They are found for the most part in the Moluccas, and are held in great estimation in some parts of the East. Many of the species are very docile and familiar. The following are of great beauty.

The COLLARED LORY. (*Lorius domicella.*) This species is about the size of a common pigeon; general colour of the body scarlet; the wings grass green, with the ridge of the shoulders blue, and the tips of the quill feathers rather dusky; across the breast is a moderately broad yellow bar, sometimes waved or intermixed with a portion of red; thighs violet-blue; crown of the head violet-black; bill deep yellow; under coverts of the wings violet-blue; and the under surface of the tail inclining to purple. It is lively, gay, and remarkable for its distinctness of utterance.

CERAM LORY. (*Lorius garrulus.*) Size of the preceding; colour scarlet, with deep grass-green wings and thighs; shoulder tips yellow: tips of the wings inclining to chestnut-brown; tail generally of the same scarlet colour with the rest of the plumage for about half its length, the remainder blue, but the two middle tail-feathers of a green hue.

SCARLET LORY. (*Lorius coccineus.*) The head, neck, body, and coverts of the tail are of a shining scarlet hue, except the feathers on the lower part of the neck behind, which are tipped with yellow. The greater quills of the wings are a dark green,

and those which fall over them are a lighter green. The upper part of the tail is of a bright blue colour, the central feathers being slightly tinted with green. The crown of the head is *red*; and the legs and feet are of a blue-black.

RAJAH LORY. (*Lorius rajah.*) The colour of this splendid bird is a vivid scarlet, with the wings entirely golden yellow: on the top of the head is a broad spot of the same colour, and across the breast a broad bar: the thighs are yellow; the bill yellowish white; and the legs blackish.

KING LORY. (*Aprosmictus scapulatus.*) The habitat of this showy and noble species is New South Wales, where it is said to be almost wholly confined to the brushes, as it there finds a plentiful supply of seeds, fruit, and berries; but we find in Mr. Gould's description, that "when the Indian corn is becoming ripe it leaves its umbrageous abode and sallies forth in large flocks, which commit great devastation on the ripening grain." The sexes differ very considerably in the colouring of the plumage: the male has the head, neck, and all the under surface scarlet; back and wings green, the inner webs of the primaries and secondaries being black; along the scapularies a broad line of pale verdigris green; the rump and upper tail-coverts rich deep blue; tail black; bill scarlet; legs nearly brown. The female has the head and all the upper surface green; throat and chest green tinged with red; abdomen and under tail-coverts scarlet; rump dull blue; two centre tail feathers green; the remainder green, passing into bluish black; and with a rose-coloured spot at the extremity of the under surface. — Another species, the RED-WINGED LORY (*Aprosmictus erythropterus*), is said by Mr. Gould to have much of the character of the King Lory, being morose, indocile, shy, and wary; and is as exclusively an inhabitant of the interior of Australia as its near ally the King Lory is a denizen of the thick brushes which extend along the coast. He further tells his readers, that the extensive belts of *Acacia pendula* which stretch over and diversify the arid plains of the great Australian basin, are tenanted with thousands of this bird, besides numerous other species, roaming about either in small companies of six or eight, or in flocks of a much greater number. It is beyond the power of my pen (says Mr. Gould) to describe or give a just idea of the extreme beauty of the appearance of the Red-winged Lory when seen among the silvery branches of the acacia, particularly when the flocks comprise a large number of adult males, the gorgeous scarlet of whose shoulders offers so striking a contrast to the surrounding objects.

LOTTIA. A genus of Molluscs, closely resembling Patella; but the shells are generally rather flatter, and have the apex placed somewhat nearer the posterior margin.

LOUSE. (*Pediculus.*) A genus of parasitic apters, most disagreeable and *unseemly* to us, from the idea *that invariably accompanies* their presence — viz. that they are seldom prevalent where cleanliness is not wholly neglected. They are characterized by having six feet formed for walking, a mouth furnished with a proboscis, antennæ as long as the thorax, and the abdomen depressed, and formed of several segments. They undergo no metamorphosis, they are very prolific, and their generations succeed each other very rapidly. The number of species is very considerable; for not only are the human race, but many animals also, subject to the intrusive visits of its peculiar parasite.

The *Pediculus humanus*, or common louse, is distinguished by its pale and livid colour, and lobated, oval abdomen. It is produced from a small oval egg, popularly called a *nit*, fastened or agglutinated by its smaller end to the hair on which it is deposited. From this egg proceeds the insect, complete in all its parts, and differing only from the parent animal in its smaller size. When examined by the microscope the principal appearances are as follow: the trunk or proboscis, which is generally concealed in its sheath or tube, is of a very sharp form, and is furnished, towards its upper part, with a few reversed aculei or prickles: the eyes are large, smooth, and black; the stomach and intestines, which possess the greater part of the abdominal cavity, afford an extremely distinct and curious view of the peristaltic motion; while the ramifications of the trachea or respiratory tubes appear dispersed throughout various parts of the animal: the legs are short, and terminated by a sharp-pointed double claw; and the insect is everywhere covered by a strong granulated skin. It would be as unnecessary as disgusting to dwell on the habits of this insect, or on the dreadful and loathsome disease by which, in ancient times, the human race was visited; and from which Herod, Antiochus, Callisthenes, Sylla, and many others, are said to have perished. Those who would study the history, scientific and popular, of these parasites, must take advantage of Mr. Denny's elaborate work: the number of species found on Birds, &c., in this and other countries, is very great.

LOVE-BIRD. (*Psittacula.*) The name given to a beautiful and diminutive group of birds belonging to the *Psittacidæ*. They are distinguished by the tail being slightly graduated; they are found in both continents; and are remarkable for having no furcula.

LOXIA. A genus of Conirostral passerine birds, remarkable on account of the peculiar conformation of the bill, which is compressed, and the two mandibles so strongly curved, that their points cross each other. [See CROSSBILL.]

LUCANIDÆ. [STAG BEETLES.] An important family of Coleopterous insects, comprising some of very large dimensions. The *Lucanidæ* are distinguished by having the antennæ terminated by a large club, *composed of* several of the apical joints; by the legs being robust, the anterior tibiæ being

generally dilated and toothed; by the males of many species having singular horns affixed to the head and thorax; and by the great size of the mandibles. The larvæ are large fleshy grubs, having the extremity of the

STAG BEETLE. — (LUCANUS CERVUS.)

body curved towards the breast, so that it is not able to creep upon a flat surface, but compelled to lie on its side. Both in their larva and perfect states these insects are herbivorous, their habits, however, varying in the different families, according to their several structures. The family is of moderate extent, and but sparingly scattered over the globe. — Amongst the exotic genera, the beautiful Australian genus *Lamprima* is distinguished by its splendid metallic colouring, the remarkable porrected and villose mandibles, and the large plate which arms the extremity of the anterior tibiæ of the males. — Another most remarkable genus is *Chiasognathus*, in which the mandibles are longer than the body, rather slender, bent down towards the tip, where they are suddenly reflexed; they are also furnished on the under side at the base with a long horn: the colours of this genus are exceedingly splendid and metallic.

The beetles of this family fly abroad during the night, and frequently enter houses at that time, somewhat to the alarm of the occupants; but they are not venomous, and never attempt to bite without provocation. They pass the day on the trunks of trees, and live upon the sap, for procuring which the brushes of their jaws and lip seem to be designed. They are said also occasionally to bite and seize caterpillars and other soft-bodied insects, for the purpose of sucking out their juices. They lay their eggs in crevices of the bark of trees, especially near the roots, where they may sometimes be seen thus employed. The grubs of the large kinds are said to be six years in coming to their growth, living all this time in the trunks and roots of trees, boring into the solid wood, and reducing it to a substance resembling very coarse sawdust; and the injury thus caused by them is sometimes very considerable. When they have arrived at their full size, they enclose themselves in egg-shaped pods, composed of gnawed particles of wood and bark stuck together and lined with a kind of glue: within these pods they are transformed to pupæ, of a yellowish white colour, having the body and all the limbs of the future beetle encased in a whitish film, which being thrown off in due time, the insects appear in the beetle form, burst the walls of their prison, crawl through the passages the larvæ had gnawed, and come forth on the outside of the trees. Our figure represents the *Lu-*

LUCANUS IBER.

canus Iber, a very common Brazilian species; but we may rather refer to the common Stag-beetle (*Lucanus cervus*), a highly characteristic species of the group, which is seen flying about in the evening, in the middle of summer, especially round the oaks, upon the wood of which the larva feeds; remaining in that state for several years, before undergoing its final transformation.

LUCERNARIA. A genus of Polypi belonging to the *Radiata*. They affix themselves by a slender peduncle to sea-weeds and other substances. The upper part expands like an inverted parasol, and is sur-

LUCERNARIA AURICULA.

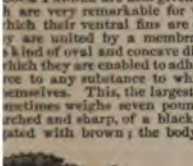
rounded by numerous tentacula; and between these are eight cæca, proceeding from the stomach, and containing a red granulated matter. *L. auricula*, here figured, has the border octagonal, with a bundle of tentacula in each division.

LUCINA. A genus of bivalve Mollusca, comprising many species, both recent and fossil, and very universally diffused. The shell is nearly round, inequilateral, and radiately striated; bosses small and pointed; the outer surface sculptured, the inside

red with small holes; cardinal teeth distinct, but variable in e foot of the animal is long and

US. A genus of worms in the stem, of which the common is the type. They generally the surface of the ground, either he dry soil, or burying themd, where many of them lead a life. [See EARTH-WORM.]

SH. (*Cyclopterus lumpus.*) A ious fish, deriving its name mmess of its form: its height alf its length, and its thickness s height. The names LUMP-COCK PADDLE are also given to h are very remarkable for the hich their ventral fins are ar- y are united by a membrane kind of oval and concave disc; hich they are enabled to adhere ce to any substance to which emselves. This, the largest of metimes weighs seven pounds. rched and sharp, of a blackish ated with brown; the body is



– (CYCLOPTERUS LUMPUS.)

with sharp, black tubercles; and there are three rows of large nd another on the back. The f this species is on the Northern e coast of Greenland: it is also any parts of the British seas, ring season: when it approaches the purpose of depositing its he Northern seas great numbers evoured by the seals, who swal- the skins, quantities of which, are seen floating about in the s; and it is said that the spots ds carry on their depredations y distinguished by the smooth- ater. Its power of adhesion is rful. Pennant says, "that on s of this species, just caught, water, it fixed itself so firmly , that on taking it by the tail, all by that means was lifted, d some gallons, and that with- the fish from its hold." The Lump-fish, when in the highest mbine various shades of blue, ich orange; and in the month may be frequently seen in the don fishmongers, suspended by the back, its singular form and urs being sure to attract the the public. The flesh is soft but the Greenlanders *gladly ves of the arrival of the species.*

LURCHER. A species of Dog whose principal use is to assist the poacher in his nefarious and demoralizing nocturnal trade. It is supposed to be descended from the Shepherd's Dog and the Greyhound, exhibiting the stout, rough, homely character of the former, combined with the long muzzle and limbs of the latter. It is not so tall as the Greyhound; its hair is rough and wiry; the ears are half erect; and the tail is short and pendent. None of the canine species evince more sagacity, or serve their masters with more fidelity. Whether it be required to drive partridges into the net, to run down a hare, to seize a fallow-deer, or to start a rabbit, the Lurcher pursues his object in silence, and with so much skill as to render almost useless to the owner of him any other description of sporting dog.

LUTRARIA. A genus of Conchifera, found in the sand at the mouth of rivers in temperate climates. Foot of the animal sharp, oval, and long. The shell is inequilateral, oblong or ovate, gaping at both extremities; hinge with two cardinal teeth in one valve, and a triangular pit; no lateral teeth; in which respect it differs from the genus *Mactra*, which it otherwise much resembles.

LYCÆNA. A genus of Butterflies closely allied to *Polyommatus*. Referring the student to the work of Messrs. Doubleday and Hewitson, we here restrict ourselves to the notice of two British species.

The LYCÆNA DISPAR, or LARGE COPPER BUTTERFLY. It is generally remarked that this splendid insect is chiefly confined to the fenny counties of Cambridge and Huntingdon, and the neighbouring ones of Suffolk and Norfolk. The upper surface of the wings of the male are a brilliant copper colour, with an obscure row of spots towards the tip; the costal and posterior margins, and a patch at the base, black; the posterior, with a slender oblong discoidal line, and the margins black; beneath, the anterior wings are pale fulvous orange, with ten distinct ocelli, with a large black pupil and slender white iris: posterior wings bluish, with an elongate discoidal streak, and numerous rather obsolete ocelli, with a black pupil and pale blue iris: the hinder margin is deep orange, except where it unites with the anterior, margined internally and externally with a series of black spots. In the female the anterior wings above are divested of the gloss so conspicuous in the male, and have nine or ten black spots, two or three of which are placed near the base of the costal margin, the rest in an arcuated band near the tip: the posterior wings are dusky brown, with the nervures and a denticulated hinder band copper-coloured. The ocellated spots vary considerably in both sexes. Caterpillar bright green, and somewhat hairy, with innumerable white dots: it feeds upon a kind of dock. The chrysalis is at first green; afterwards pale ash, with a dark dorsal line, and two abbreviated white ones on each side.

The LYCÆNA PHLÆAS, or SMALL COPPER BUTTERFLY. One very part of our island, as

well as on the adjacent continent, this pretty Butterfly is tolerably abundant on commons, roadsides, pastures, and heaths. The an-

SMALL COPPER BUTTERFLY
(LYCÆNA PHLÆAS.)

terior wings above are of a brilliant copper colour, with the posterior margin and eight discoidal spots black; the hinder wings are brownish black, with a copper band on the

UNDER SIDE OF LYCÆNA PHLÆAS.

hinder margin, which is externally denticulated, and has a black line and some dots on the disc: beneath, the colour is paler and not glossy, and there are ten distinct black spots on the disc; the posterior wings are drab-coloured, tinged with copper, and

CATERPILLAR AND CHRYSALIS OF L. PHLÆAS.

sprinkled with numerous blackish dots: the cilia are rose-coloured at the tip, and black at the base: the body is black with tawny hairs above; the antennæ black, annulated with white. Caterpillar green, with a yellow dorsal stripe. It is observed to feed much on the sorrel. Mr. Knapp, in his attractive work, the 'Journal of a Naturalist,' speaking of this pretty little butterfly, says, "We shall see these diminutive creatures, whenever they come near each other, dart into action, and continue buffeting one another about till one retires from the contest; when the victor returns in triumph to the station he had left. Should the enemy again advance, the combat is again renewed; but should a cloud obscure the sun, or a breeze [illegible] air, their ardour becomes abated, [illegible] tention ceases. The *papilio phlæas* [illegible] combat even with its kindred. Tw[illegible] are seldom disturbed, when baski[illegible] knot of asters in September, without strife ensuing."

LYCÆNIDÆ. A family of lepid[illegible] insects, comprising several distinc[illegible] of small, but beautiful Butterflies, i[illegible] *Polyommati*, or the Blues; *Lycæna* Coppers; and *Thecla*, or the Hair-[illegible] The majority of these have at least [illegible] angle, if not the entire under surfac[illegible] wing, ornamented with eye-like [illegible] various colours. The flight of the[illegible] is feeble and slow. The caterpillars [illegible] great resemblance to wood-lice; [illegible] chrysalis is short, obtuse at each [illegible] girt round the middle as well as atta[illegible] the tail. "They have hitherto b[illegible] served to feed only upon the leave[illegible] ferent trees and plants in the larv[illegible] but a beautiful Indian species (*The*[illegible] *crates*) resides within the fruit of th[illegible] granate, several being found within [illegible] in which, after consuming the inter[illegible] assume the pupa state, having first [illegible] many holes as there are insects thr[illegible] rind of the fruit, and carefully atta[illegible] footstalk to the branch, by a costing [illegible] in order to prevent its falling."—*W*[illegible]

LYMEXYLON: LYMEXYLO[illegible] A genus and family of Serricorn [illegible] having the antennæ simple and su[illegible] liform, and the thorax nearly cyl[illegible] They are nearly allied to the *E*[illegible] and *Buprestidæ*. From the latter, [illegible] the insects of this small group are [illegible] guished by having the head broad [illegible] narrowed behind, and not sunk [illegible] thorax; they have not the breast-[illegible] the Elaters, and their legs are close t[illegible] and not separated from each oth[illegible] broad breast-bone, as in the Bupr[illegible] and the hip-joints are long, and [illegible] into the breast. In the principal [illegible] this family the antennæ are short, [illegible] the third joint, flattened, widened, [illegible] toothed on the inside; and the jaw[illegible] of the males have a singular fring[illegible] attached to them. The body is long, [illegible] nearly cylindrical, and not so firm [illegible] as in the Elaters. The feet are five-[illegible] long, and slender. The larvæ of *Ly*[illegible] and *Hylecœtus* are very odd-lookin[illegible] and slender grubs. The head is [illegible] first ring is very much hunched; an[illegible] top of the last ring there is a fl[illegible] pendage, resembling a leaf in *Ly*[illegible] and like a straight horn in *Hylecœtus* [illegible] have six short legs near the head. [illegible] grubs inhabit oak-trees, and make [illegible] lindrical burrows in the solid wo[illegible] generical name *Hylecœtus* means a [illegible] in the woods, or one who makes hi[illegible] the forest. One species of these inse[illegible] *mexylon navale*) is very common in [illegible] forests of the north of Europe, but [illegible] England. Its larva is very long. [illegible] time it multiplied to such an extent [illegible] dock-yards at Toulon, that the [illegible]

committed in the wood-works were very serious. It is recorded that Linnæus was once consulted by the King of Sweden upon the cause of the decay and destruction of the ship-timber in the royal dock-yards, and having

SHIP-TIMBER BEETLE.
(LYMEXYLON NAVALE.)

traced it to the depredations of insects, and ascertained the history of the depredations, by directing the timber to be sunk under water during the season when these insects make their appearance in the winged-state, and were busied in laying their eggs, he effectually secured it from future attacks.

LYMNÆA. A genus of Molluscs, inhabiting a thin, oval or oblong shell; and having two triangular tentacula, with eyes at the base; foot oval and thin. Like the

LYMNÆA STAGNALIS.

Physæ, which they much resemble in appearance, they are abundantly found in our rivers and ponds, particularly the latter. They feed on aquatic plants, to the under side of the leaves of which they adhere, and come to the surface of the water for air; the number of their eggs is very great, and they are deposited on stones, stems of vegetables, &c., in long masses enveloped in a glairy substance.

LYNX. (*Felis lynx.*) The name given to certain species of feline animals, which differ slightly from others of the cat tribe, in having the ears tufted with hair, in the greater elevation of the body at the haunches, and in having a shorter tail. They are less homogeneous than the other felines, and show a sullen and suspicious disposition: they live upon small quadrupeds and birds, pursuing the latter *to the tops of trees*; and some of them also resort to the water, to feed on fishes. With some slight varieties as to size and colour, the Lynx appears to be found in all the colder regions of Europe, Asia, and America, residing in thick woods, and preying on hares, deer, birds, and almost every kind of defenceless animal. Its average length is about three feet. In colour the Lynx varies, but is generally of a pale gray, with a slight reddish tinge: the back and whole upper parts are obscurely spotted with small dusky or blackish marks; the throat, breast, and belly are white; the tail white, with a black tip; and the ears tipped with pencils of long black hair. Its eyes are brilliant and penetrating, its aspect mild, and its general air sprightly and agreeable. Though possessing nothing in common with the wolf but a kind of howl, it is often mistaken for that animal when heard at a distance. The female produces two or three young at a birth, and carefully secretes them in the recesses of the woods. The Lynx is clothed with a very thick soft fur; and the colder the climate, the more valuable it generally is: those skins which approach to a pale or whitish colour, and on which the spots are most distinct, are the most valued. The skin of the Canada Lynx forms a considerable article in the fur trade; the Hudson's Bay Company alone annually importing from seven to nine thousand skins. The fur is close and fine on the back, longer and paler on the belly. When blown aside it shows on the middle of the back a dark liver-brown colour from the roots to near the tip, but on the sides it is for the greatest part of its length of a pale yellowish brown, being merely a little darker near the roots.

LYRE-BIRD OF AUSTRALIA. (*Menura superba.*) Among the many curious and beautiful genera and species of the feathered tribes which Mr. Gould has delineated and described in his elegant work, 'The Birds of Australia,' no one seems to deserve more attention than the Lyre-bird; for, independently of its remarkable form, and the opposite opinions entertained by ornithologists as to the situation it should occupy in the natural system; "and although," as Mr. Gould observes, "more than fifty years have now elapsed since the bird was first discovered, little or no information has been hitherto published respecting its economy and habits." After paying considerable attention to the subject, while in Australia, this gentleman is decidedly of opinion that it has not, as has been generally considered, the most remote relationship to the *Gallinaceæ*, but that it forms, with certain American genera, a family of the Insessorial order. "Notwithstanding the great size of *Menura*, and the extraordinary form of its tail, in almost every other point it presents a striking resemblance to its minute congeners; like them, it possesses the bristles at the base of the bill, but to a less extent, the same unusual mass of loose, flowing, hair-like feathers on the back and rump, the same extraordinary power of running, and the like feebleness of flight." The great *stronghold* of the Lyre-bird is the colony of

New South Wales: it inhabits equally the brushes on the coast, and those that clothe the sides of the mountains in the interior. "Of all the birds I have ever met with," says Mr. Gould, "the Menura is by far the most shy and difficult to procure. While

LYRE BIRD.—(MENURA SUPERBA.)

among the brushes I have been surrounded by these birds, pouring forth their loud and liquid calls, for days together, without being able to get a sight of them; and it was only by the most determined perseverance and extreme caution that I was enabled to effect this desirable object." The Lyre-bird is constantly engaged in traversing the brush from one end to the other, from mountain-top to the bottom of the gullies whose steep and rugged sides present no obstacle to its long legs and powerful muscular thighs. When running quickly through the bush they carry the tail horizontally, that being the only position in which it could be borne at such times.

Besides its loud full call, which may be heard at a great distance, it has an inward and varied song, the lower notes of which can only be heard when you have stealthily approached to within a few yards of the bird while it is singing. Its habits appear to be solitary, seldom more than a pair being seen together. It constructs a large nest, formed on the outside of sticks and twigs, like that of a magpie, and lined with the inner bark of trees and fibrous roots. The eggs are two in number, of a light colour, freckled with spots of red. The general colour of the plumage is brown; the secondary wing-feathers nearest the body, and the outer webs of the remainder, rich rufous brown; upper tail-coverts tinged with rufous; chin and front of the throat rufous, all the under surface brownish ash-colour; upper surface of the tail blackish brown; under surface silvery gray, becoming very dark on the external web of the outer feather; the inner webs fine rufous, crossed by numerous transparent bands; the margin of the inner web and tips black; bare space round the eye of a dark lead colour; legs and feet black. The female is destitute of this singularly formed tail, and in having the bare space round the eye less extensive.

LYTTA. [See CANTHARIDES.]

MACAUCO. A genus of quadrumanous animals nearly approaching the Monkey tribe. [See LEMUR.]

MACAW. These magnificent birds belong to the *Psittacidæ*, or Parrot tribe, and are distinguished by having their cheeks destitute of feathers, and their tail-feathers

RED AND YELLOW MACAW.
(MACROCERCUS ARARAUNA.)

long. They are all natives of the tropical regions of South America; and abound in the swampy grounds which are covered with palm-trees, the fruit of which they are particularly fond of. They generally appear in pairs, and are always observed to perch on the summits of trees, or on the highest branch. During the day they wander to the

BLUE MACAW
(MACROCERCUS HYACINTHINUS.)

distance of about a league from their favourite spot or home, but always return in the evening. They build their nests in the hollow of decayed trees; and lay twice in the year, generally two eggs at a time. The male and female share alternately in the labour of incubation, &c. When young they

tamed, and soon grow familiar
ns they are accustomed to see;
ll the Parrot tribe, they show an
strangers. They are particularly
dits, but in a domesticated state
ed on almost every article, more
sugar, bread, and fruits. Like
ets, they use their claws with great
though in climbing they always
aking hold with their bill in the
ace, using their feet only as a
nt of their motion. They may
o speak, but their articulation is
l unpleasant. Rarely, however,
which are brought to Europe
articulate more than a word or
their general voice is a loud and
ream. We have figured a lovely
species called, from its fine hya-
tinage, the MACROCERCUS HYA-
. It is not so common in aviaries
r species.

ARLET MACAW. (*Macrocercus*
This bird is allowed to be the most
ith regard to colour, as well as
e largest of all the *Psittacidæ*.
tip of the bill to the extremity
l some of them measure thirty-
. The arch of the upper man-
n the forehead to the point of
nearly three inches; the upper
is whitish, the lower black or
The nostrils are placed in the
t of the bill, just within the fea-
e sides of the head are destitute
, and covered with a whitish,
kin: the head, neck, breast, belly,
per part of the back, and lesser
ers of the wings, are of a very
red or scarlet colour; the quill-
f the wings are externally of a
and on their under sides of a
the first feathers next above the
a bright yellow, some of the fea-
r tipped with green; the blue
ch fall next the back are tinged
; and the hinder part of the thigh
green intermixed with the red.
r belly and covert-feathers under
also the lower part of the back
s on the upper side of the tail,
ery fine blue colour: the tail-
radually shorten towards the sides;
e longest or middle-feathers are
d; the shorter, or side-feathers,
red and partly blue; the legs and
ered with dusky scales; and the
disposed two forwards and two
, as in others of the parrot tribe,
with strong claws. This noble
ck occasionally varies in some
point of size and colours, was
dered at its first introduction into
a present fit for royalty, and was
principal ornaments in the halls
.

ED YELLOW MACAW. (*Macrocer*
) This species is less common
Scarlet Macaw, and but little in-
point of size. The bill is arched
black colour: the *nostrils are*
the base of *the upper mandible, in*
a white bare skin, which extends all round the eyes, this skin being variegated with fine lines of small black feathers: immediately under the bill is a large black spot, which encompasses part of the bare white space on the sides of the head: the feathers on the top of the head are green, gradually becoming blue on the neck: the upper side of the neck, the back, and upper sides of the wings and tail are of an exceeding fine blue colour, the lesser wing-coverts and the rump being a little tinged with green, and the tail and upper sides of the quill-feathers with purple: all the blue feathers of the back, wings, and tail are of a reddish yellow on their under sides: the fore part of the neck, the breast, belly, thighs, and covert-feathers under the tail, are of a fine yellow orange-colour, except the hinder parts of the thighs, where there is a little blue intermixed: the covert-feathers withinside the wings are yellow, which appears outwardly on the ridge or joint in the upper part of the wing: the legs and feet are nearly black.

BRAZILIAN GREEN MACAW. (*Macrocercus severus.*) This bird is about the size of a tame pigeon: the colour is a fine green; the band of the shoulders and whole under side of both wings and tail red: quill-feathers and some of the larger coverts fine blue: tail green above, but growing blue at the tips; the two middle feathers blue throughout their whole length on the outer edges: bill black, with flesh-coloured cere; dark feathers round the bill: legs black, with a feathery red zone round the bottom of the thighs. It is said to be common in Brazil, appearing in innumerable flocks, and committing great devastation among the coffee plantations, by devouring the ripe berries.

MACKEREL. (*Scomber scomber.*) This well-known fish is one of the most beautiful as regards the brilliancy of its colours, and at the same time one of the most useful as regards the food of man, among the inhabitants of the watery element. It is a native

MACKEREL.—(SCOMBER SCOMBER.)

of the European and American seas, generally appearing at stated seasons, in vast shoals, round particular coasts. The periodical appearance of these large shoals was formerly imputed to its migration from north to south: but many facts are opposed to this idea; and there is abundant reason to believe that it inhabits the deeper parts of the seas around our island through the whole year, and that its periodical appearance on our coasts, in such vast numbers, is *solely* due to its seeking the shore, for the purpose of depositing its spawn. The obser-

vations on this subject, which were made when speaking of the Herring, are equally applicable here; and, to the able zoologist (Mr. Yarrell) whom on that occasion we quoted, we are now further indebted for the following sensible arguments in support of this theory. He says, "It does not appear to have been sufficiently considered, that, inhabiting a medium which varied but little either in its temperature or productions, locally, fishes are removed beyond the influence of the two principal causes which make a temporary change of situation necessary. Independently of the difficulty of tracing the course pursued through so vast an expanse of water, the order of the appearance of the fish at different places on the shores of the temperate and southern parts of Europe is the reverse of that which, according to their theory, ought to have happened. It is known that this fish is now taken, even on some parts of our own coast, in every month of the year. It is probable that the Mackerel inhabits almost the whole of the European seas; and the law of nature which obliges them and many others to visit the shallower water of the shores at a particular season, appears to be one of those wise and bountiful provisions of the Creator, by which not only is the species perpetuated with the greatest certainty, but a large portion of the parent animals are thus brought within the reach of man; who, but for the action of this law, would be deprived of many of those species most valuable to him as food. For the Mackerel dispersed over the immense surface of the deep, no effective fishery could be carried on: but, approaching the shore as they do from all directions, and roving along the coast collected in immense shoals, millions are caught, which yet form but a very small portion compared with the myriads that escape."

The usual length of the Mackerel is about fourteen inches, or varying from twelve to sixteen; but in the northern seas it is occasionally found of greater size. Its colour on the upper parts, as far as the lateral line, is a rich, deep blue, accompanied by a varying tinge of green, and marked by numerous black transverse streaks, which in the male are nearly straight, but in the female beautifully undulated: the jaws, gill-covers, and abdomen are of a bright silvery hue, with a slight varying cast of gold-green along the sides. The scales are small, oval, and transparent; the pinnules or spurious fins are small, and five in number both above and below: the nose is pointed; the under jaw the longest; the teeth are alike in both jaws, curving slightly inward; and the tail is crescent-shaped. Beautiful as are the colours of the Mackerel when alive, no sooner is it caught than its lustre begins to disappear. It is a voracious feeder, and its growth is rapid; but it is not the largest fish that are accounted the best for the table. Those taken in May or June are considered superior in flavour to such as are caught either in the spring or autumn. There are various modes of fishing for Mackerel; but the way in which the greatest numbers are taken is by drift-nets.

MACROURA. The name of a very extensive group of crustacous animals, (otherwise called Long-tailed Decapods), including Lobsters, Prawns, Shrimps, &c. At the end of the tail is a sort of fin, expanded laterally, which serves, by its vertical strokes, to propel the animals through the water.

MACTRA; MACTRADÆ. A genus and family of Molluscous animals of the order Conchifers Dimyaria. Shell oval, transverse, with thin cardinal and lateral teeth; valves slightly inequilateral, and gaping a little on each side; bones protuberant. Animal, foot sharp, oval, and long. The Mactræ live in the sand, and are universally diffused. The genus includes many rare and beautiful species; though the shells exhibit rather a diversity of forms, they are generally more or less triangular.

MADREPHYLLIÆA. The name given to an extensive group of Zoophytes, forming part of the MADREPORES. [See next *Art.*]

MADREPORE. A submarine substance, resembling coral, and consisting of carbonate of lime with some animal matter. It is of a white colour, wrinkled on the surface, and full of cavities or cells, inhabited by a small animal, which discharges a liquid from which the stony substance is formed. "These beautiful rocky masses," observes Mr. Rymer Jones, "for such they appear to the vulgar

MADREPORA ABROTANOIDES

eye, called *Madrepores*, which, branching into countless varieties of arborescent forms, are abundantly met with in the ocean, and so frequently ornament the cabinets of the curious, are merely fabrics constructed by compound Polyps, and owe their growth to the accumulation of earthy particles deposited within a fleshy substance that is nourished by countless Polyps, more or less resembling *Hydræ*, diffused over all its external surface. * * * Every case of the branchy stems of the Madrepore is seen, upon a cursory survey, to be covered with multitudes of minute pits or depressions, although these, from the smallness of their size, are scarcely visible to an inattentive observer. Examined with a magnifying glass, however, ... of these multitudinous orifices is found to be a cell of beautiful construction, equally remarkable for the subtle-

mutual regularity with which it is formed and the exquisite fineness of the materials composing it. * * * Let us endeavour to picture to ourselves an extent of the bed of the ocean, spacious as these realms that we inhabit, carpeted with living plants; every blade of grass and every flower instinct with life, and all the vast expanse busily engaged in deriving from the surrounding water materials for subsistence: let us consider that from age to age, the wide-spread scene is building up, by constant precipitation from the sea, a rocky territory, co-extensive with itself, and then we shall perceive that, in the course of time, even these almost unknown members of the animal creation may perform achievements at which the boldest mind is startled when it comes to survey what they have accomplished."

MAGILUS. A genus of Molluscs, inhabiting a thick, tubular, irregularly contorted shell; spire short, consisting of three or four whorls; aperture longer than wide, without any notch, but an angle at the base. When in a young state," observes Miss Catlow, "this curious shell presents all the character of a regular spiral univalve. This animal

MAGILUS ANTIQUUS.

establishes itself in the excavations of Madrepores; and as the coral increases around it, the Magilus is obliged, in order to have its aperture on a level with the surrounding surface, or near it, to construct a tube, the growth of the coral determining its length. As this tube goes on increasing, the animal abandons the spiral for the tubular part of the shell; and in the operation it leaves behind no partitions, but secretes a compact calcareous matter, which reaches to the very summit of the spiral part; so that in an old specimen the posterior part of the shell presents a solid mass. One species only, *Magilus antiquus*, is known. The colour is white, more or less pure."

MAGOT. The Barbary Ape. (*Pithecus Inuus.*) [See APE.]

MAGPIE. (*Pica caudata.*) A crafty and familiar bird of the corvine family, whose plumage of black and white, *green and* purple, with the rich and gilded variegations of its tail, may be safely pronounced beautiful; yet its propensity for mischief, its noise, and its restless and quarrelsome disposition, render it every where an unwelcome intruder. In length it is about eighteen inches; its bill is strong and black; eyes hazel; head, neck, back, breast, and tail-coverts deep black, forming a fine contrast with the snowy whiteness of the under parts and scapulars. The plumage is in general glossed with green, purple, and blue, which catch the eye in different lights, and are particularly resplendent on the tail, which is very long, and rather wedge-shaped: vent, under tail-coverts, thighs, and legs black: on the throat and part of the neck the feathers are mixed with others, resembling strong whitish hairs. It feeds both on animal and vegetable substances; and when satisfied with its present meal, it will hide the remainder of its provision for a future occasion. It builds its nest of sticks and clay, with great art and sagacity; defending it on all sides with sharp thorny twigs, leaving only a hole for entrance, and furnishing the inside with a lining of fibrous roots and other soft materials. The female lays seven or eight eggs, pale green, spotted with black. The Magpie may easily be tamed and taught to pronounce words and short sentences, but

MAGPIE.—(PICA CAUDATA.)

its tones are too shrill and sharp to be a perfect imitation of the human voice. Like other birds of its kind, it is addicted to stealing and hoarding. It will occasionally plunder the nests of some other birds, and even carry off whole broods of stray ducklings when its young demand more food than is easily obtained: but it has its good qualities also; for it frees our pastures of an incredible number of grubs and slugs, and often performs a friendly office for sheep and oxen, by getting on their backs and freeing them from troublesome vermin. Magpies may be said to be social, though not actually gregarious.

MALACODERMATA. A section of Pentamerous Coleoptera: for a familiar example of which we must refer to the Glow-worm (*Lampyris*), and Soldier-beetle (*Telephorus*). The antennæ differ in the two sexes. The accompanying figure represents the female of the *Lamprocera Latreillii*, also called

RADCLIFFE

Homalisus grandis, a native of Brazil. The pectinated figure on the one side shows the

LAMPROCERA LATREILLII.

antennæ of the male; the other figure representing the leg, with its five-jointed or pentamerous tarsus.

MALLEUS, or HAMMER-HEADED OYSTER. (*Malleus vulgaris*). A genus allied to *Ostrea*, chiefly remarkable for its singular form; the two sides of the hinge being extended so as to resemble in some measure the head of a hammer, while the valves, elongated nearly at right angles to these,

MALLEUS VULGARIS

represent the handle. It inhabits the Indian archipelago, attaching itself by a byssus to submarine rocks. The shape of the shells are so very various, that scarcely two of a species can be found alike; externally their appearance is very rude and irregular, but the interior is extremely beautiful, being lined with the most brilliant mother-of-pearl; hence, as they are rather rare also, they generally obtain a good price.

MALURUS. A genus of Passerine birds, abundantly dispersed throughout New South Wales, containing several species, one of which,

MALURUS CYANEUS, named by the colonists the SUPERB WARBLER, BLUE WREN, &c., is the oldest known species of the whole of the lovely group forming the genus; and its favourite haunts are localities of a wild and sterile character, thinly covered with low scrubby brushwood, near the borders of rivers and ravines. The male in summer has the crown of the head, ear-coverts, and a lunar-shaped mark on the upper part of the back light metallic blue; lores, line over the eye, occiput, scapularies, back, rump, and upper tail-coverts velvety black; throat and chest bluish black; tail deep blue, indistinctly barred with a darker hue, and finely tipped with white; wings brown; under surface buffy white, tinged with blue on the flanks; bill black; feet brown. The female has the lores and a circle surrounding the eye reddish brown; wings and tail brown; under surface brownish white; bill reddish brown; feet pale brown.

The Malurus Cyaneus is of a very wandering disposition, but seldom travels far beyond the district in which it was bred. During the winter they associate in small flocks; but as spring advances they separate into pairs, the male undergoing a most surprising change of plumage, which for a few months is as resplendent as it is possible to conceive: indeed, its whole character and nature appear also to have received a new impulse; the little creature now displaying great vivacity, proudly showing off its gorgeous attire, and pouring out its animated song almost unceasingly, until the female has completed her task of incubation. In the winter no bird can be more tame and familiar, seeming to court, rather than shun, the presence of man. Its mode of progression is a succession of bounding hops, performed with great rapidity, its short and rounded wing incapacitating it for protracted flight. Two, if not three, broods are reared in a season; and, independently of her own young, the female is the foster-parent of the Bronze Cuckoo, a single egg of which species is frequently found deposited in her dome-shaped nest, which has a small hole at the side for an entrance, and is usually placed near the ground, in a secluded bush, tuft of grass, or under the shelter of a bank. The song is a hurried strain, somewhat resembling that of the European Wren.

MAMMALIA. That class which is placed at the head of the Animal Kingdom, because it is composed of the beings whose faculties are the most numerous, whose structure is the most perfect, whose movements are the most various, and whose intelligence is the most developed. The term is derived from *mammæ* [*breasts*], and the class contains all those animals which suckle their young by means of breasts. Most mammiferous animals are formed for walking; a few, however, can sustain themselves in the air; and a limited number are destined to live in the water. From Man, who, from his most perfect organisation, stands at the head of the system, to Whales and other cetaceous animals, which are classed at the end of Mammalia, the skeleton is formed upon the same general principles, and its parts are only altered and modified to suit the station which the animal is destined to fill. All Mammalia are viviparous; the fœtus derives its nourishment direct from the blood of the mother, and, after birth, she supports it, for a longer or shorter time, by her milk, a nutritious liquid secreted by particular glands, called *mammæ*. Sometimes the young are born with their eyes open, and can immediately run about, and procure their own food; but many come into the world with their eyes closed, and in a state of utter helplessness.

Linnæus was the first to bring under review the whole animal, vegetable, and

e "Regne Animal," by Cuvier, shown that there are "immu- rescribed to living beings," di- s Mammalia into the following HUMANA; with two hands, of is the only species. He has of teeth.—2. QUADRUMANA; four hands, and having three th: Monkeys, &c.—3. CARNA- have three kinds of teeth, re or less of a carnivorous cha- mb of the anterior extremities ble to the other fingers or toes. into three families:—*Cheirop- ; Insectivora*, or such animals on insects, as the Hedgehog, &c.; animals which subsist on flesh; MARSUPIALIA: animals pro- a pouch for the protection of after birth, as the Kangaroo, &c. TIA, or Gnawers: animals with cisors in each jaw, separated olars by a void space. The st genera with flat or rigged in others blunt tubercles: Hares, c.—5. EDENTATA: generally eeth, some genera with molars toes varying in number, and th large hoof-like nails: Ant- -7. PACHYDERMATA, or thick- als; it includes all the hoofed except the ruminants: Horses, INANTIA; animals which ru- ew the cud, with cloven feet, with four stomachs: Deer, &c. TA: Whales and their conge-

tal characters of the Mammalia s the number and structure of and the construction of their et: on the perfection of the ch the experiness of the animal d from their dental formula eral measure, be deduced the

parts of that country. It is not to be confounded with the *Mastodon*, a gigantic fossil animal of North America.

Some authors derive the name "Mammoth" from the word *Behemoth*, used in the book of Job to designate an immensely large animal, or from *Mehemoth*, an Arab term applied to elephants of extraordinary size; while others are of opinion that it is merely an adoption of the word *Mammouth*, given by the Siberians to a huge animal, which they (in order to account for the quantity of Mammoth-horns, or fossil ivory) pretend lived underground in the manner of moles, and could not bear the light of day. This story is in a manner corroborated by the Chinese account of a subterranean animal, which in their great work on Natural History is thus described: "The animal called *tien-schu*, *tyn-schu*, or *yn-schu* (signifying the mouse that conceals itself), lives entirely in subterranean caverns; in form it resembles a mouse, but is equal to an ox or a buffalo in size. It has no tail, and is of a dark colour; it is exceedingly strong, and digs caverns in which it lives, in rocky and woody places." It is the universal opinion throughout Siberia, that Mammoths have been found with the flesh quite fresh and filled with blood; this, although an exaggeration, is founded on the fact that entire bodies have been discovered, preserved in ice, with the flesh comparatively in a state of freshness. The best authenticated instance of this was that of the Mammoth brought to St. Petersburg by Mr. Adams, and first recorded in Oct. 1807 in the 'Journal du Nord.' The account is related in 'The Zoologist' as follows:—

"In 1799 a Tungusian fisherman observed, in a bank on the shore of the Frozen Ocean, at the mouth of the river Lena, a shapeless mass, almost enveloped in ice, and he was quite unable to make out what it could be.

mane; the skin was covered with long hair and a reddish wool; the portion of skin still remaining was so heavy, that ten men could scarcely carry it: according to Mr. Adams, more than thirty pounds weight of hair and wool was collected from the wet sand into which it had been trodden by the white bears while devouring the flesh. Mr. Adams took the greatest pains in collecting what remained of this unique specimen of an ancient creation, and procured the tusks from Jakutsk. The Emperor of Russia purchased the skeleton, which is now in the Museum of the Academy of St. Petersburg. The height of the creature is about nine feet, and its extreme length to the tip of the tail about sixteen feet. Portions of the skin and hair were presented to most of the continental museums, as well as to the College of Surgeons in London."

"The Mammoth seems a link connecting the past and the present worlds—a being whose body has outlived its destination. All the arguments which have been used to prove that the earth has undergone some great convulsion since this huge animal was endowed with life, appear perfectly untenable. In the first place, it is evident that its life became a sacrifice to a sudden snow-storm, by which it was overtaken, overwhelmed, and suffocated. The suddenness of the storm might have been accidental; the winter might have set in earlier, it might have been more severe than usual: but the animal was well adapted for such winters; its long, warm, and shaggy coat proclaim it a denizen of arctic countries, and is admirably adapted to enfinde the severest cold: such a clothing would have been intolerable in tropical regions, where elephants now abound. We learn from Bishop Heber that in some of the colder and mountainous districts of northern India, hairy elephants still exist, thus showing that this clothing is

with a single stomach; and wi
of teeth,—incisive, canine, and
position is upright, his food h
and animal, his body naked.

Man is the only animal truly
biped. His whole body is mo
vertical position. His feet furn
a larger base than those of ot
liane; the muscles which retain
thigh in the state of extension
gorous, whence results the sw
calf and buttock; the flexors
attached higher up, which pe
plete extension of the knee, an
calf more apparent. The pe
which separates the thighs a
gives to the trunk that gyrati
vourable to equilibrium: the
thigh-bones form an angle wi
the bone, which increases still
paration of the feet, and augm
of the body. And the head, b
position, is in equilibrium wit
because its articulation is exac
middle of its mass. Man thus
entire use of his hands for t
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tuated for observation. His
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sion of ideas, variations of so
which can be perceived at the
tance, and in the most vari
simultaneously.

The ordinary produce of the
cies is but one child at a birt
of gestation, nine months. T

tude and decay follow in their turn; and most of the species, either from disease, accidents, or merely old age, perish ere they see "threescore years and ten." Occasionally one lives upwards of a hundred years; but long before that patriarchal age is reached, the survivor needs no monitor to tell him that "all is labour and sorrow."

It has been made a subject of dispute, whether there is more than one species in the human race; but it is merely a dispute of words; and if the term *species* is used in its common scientific sense, it cannot be denied that there is but one species. There are, however, certain and constant differences of stature, physiognomy, colour, nature of the hair, or form of the skull, which have given rise to subdivisions of this species. Blumenbach reduces these varieties to five:—

The first variety, usually called the *Caucasian*, from its supposed origin in the Caucasus, occupies the central parts of the old continent, namely, Western Asia, Eastern and Northern Africa, Hindostan, and Europe. Its characters are the colour of the skin, more or less white or brown; the cheeks tinged with red; long hair, either brown or light; the head almost spherical; the face oval and narrow; the features moderately marked, the nose slightly arched; the mouth small; the front teeth placed perpendicularly in the jaws; the chin full and round. The regularity of the features of such a countenance, which is that of the European, causes it to be generally considered (by them at least) as the most agreeable.—2. The second variety has been called the *Eastern* variety. The colour in this race is yellow; the hair black, stiff, straight, and rather thin; the head almost square; the face large, flat, and depressed; the features indistinctly marked; the nose small and flat; the cheeks round and prominent; the chin pointed; the eyes small. This variety comprises the Asiatics to the east of the Ganges and of Mount Belour, except the Malays.—3. The *American* variety resembles that last described in several points. Its principal characters are the copper colour; stiff, thin, straight black hair; low forehead; eyes sunk; the nose somewhat projecting; cheek bones prominent; the face large. This variety comprises all the Americans except the Esquimaux. There are several branches, however, which differ considerably.—4. The fourth variety is called by Blumenbach the *Malay*, and described as of a tawny colour; the hair black, soft, thick, and curled; the forehead a little projecting; the nose thick, wide, and flattened; the mouth large; the upper jaw projecting. This variety comprehends the Islanders of the Pacific Ocean.—5. The remaining variety is the *Negro*. Its characters are: colour black; hair black and woolly; head narrow; forehead convex and arched; cheek-bones projecting; nose large, and almost confounded with the upper jaw; the upper front teeth obliquely placed; the lips thick; the chin drawn in; the legs crooked. This race is found in Western and Southern Africa, and the great islands of the Pacific, generally in the interior. There are very *great differences in* the tribes included in this variety: the Negro, with the complexion of jet, and wool; the Caffre, with a copper complexion, and long hair; the sooty Papous, or New Guineamen; the native of Van Diemen's Land, &c. "Within each of these varieties are included numerous smaller divisions, which are certainly, though less prominently, distinct in their features. The varieties of national appearance between the Scotch, English, French, and Germans, for example, are in general distinguishable, though it would be difficult to define their differences. Similar subdivisions of character exist among all the varieties, and so fill up the intervals between the extreme specimens of each as to form a regular and nearly perfect series, of which the Esquimaux and Negro might occupy the extremities, and the Europeans the middle place, between the broad and high features of the one, and the narrow, elongated, and depressed skull and face of the other."

Those writers who have gone deeply into the subject, and attempted to account for all the causes which have contributed to the diversity of the human species, have generally been led into a more discursive field than they had anticipated; while the result, perhaps, has been both inconclusive and unsatisfactory. In such a compendium as this, where brevity is scarcely less essential than precision, we are constantly warned not to exceed our limits. We shall therefore not pretend to describe minutely the anatomical structure of Man, neither shall we attempt to follow him from his entrance into life to his mortal exit; but shall endeavour to lay before the reader such of our "gleanings" as we conceive will best illustrate the subject, without extending the article to an unwarrantable length.

If Man be compared with the other classes of animated nature, we shall find that he possesses most of those advantages united, which the rest only partially enjoy. Infinitely superior to all others is the mental powers, he is also superior to them in the aptness and proportion of his form. He would indeed be one of the most wretched beings on earth, if, with a sentient mind, he was so constructed as to be incapable of obeying its impulses. In the lectures of Professor Green, this subject has been handled with philosophical acuteness and masterly power. He says, "In a comparison of the frame and capabilities of Man with those of the inferior animals, if we take the human frame as the ideal standard of form, it will be found that all others present many declensions from the idea by exaggeration or defect; and it will be found from this survey that Man is unquestionably endowed with that structure, the perfection of which is revealed in such a balanced relation of the parts to a whole as may best fit it for a being exercising intelligent choice, and destined for moral freedom. It is not, therefore, an absolute perfection of the constituents singly, but the proportional development of all, and their harmonious constitution to One, for which we contend:—a constitution which *implies* in a far higher degree than in any other animal a balanced relation of the living

powers and faculties, and which requires, therefore, in Man pre-eminently, the endowment of rational will as necessary for the control and adjustment of the balance. Man has not the quick hearing of the timid herbivorous animals; but it was not intended that he should catch the sound of distant danger, and be governed by his fears: he has not the piercing sight of the eagle, nor the keen scent of the beast of prey; but neither was Man intended to be the fellow of the tiger, or a denizen of the forest. Hence the departure from the perfect proportion of Man which we observe in the inferior animals may be regarded as deformities by exaggeration or defect, dependent upon a preponderance of a part that necessitates a particular use, or the absence of a part that deprives the animal of a power, and in both instances alike abrogates that freedom for which provision is made in the balanced relation of the constituents of the human fabric, which permits the free choice of means, and the adaptation to any purpose determined by an intelligent free-will. Dilate the head, and you have a symptom of disease; protrude the jaws, you have a voracious animal; lengthen the ears, timidity is expressed; let the nose project, and the animal is governed by its scent; enlarge the belly, and you are reminded of the animal appetites: long arms may fit him for an inhabitant of the trees, and a fit companion for the ape; and predominant length of legs are infallibly associated with the habits of the wading or leaping animals. In all, regarding Man's form with reference to his destination as the ideal standard, the means become ends; deformity prevails, and becomes the badge of unintelligent slavery to the mere animal nature."

"In the contemplation of the human skeleton, its most striking characteristic, and that which contradistinguishes it from the bony fabric of all other animals, is its adaptation to the erect position; an attribute not only peculiar to Man, but without which his structure could not correspond with his spiritual endowments, since it is at once the need and symbol of a being raised above the servile condition of the mere animal nature. Thus the skull is poised with a slight preponderance anteriorly, at the top of the vertebral column; and a plumb-line dropped from the point of its support falls through the centre of gravity between the feet, which present the base of support to the whole towering fabric. We remark, however, that the supporting parts do not range with this line. The spine is bent like an italic *S*: it recedes at the chest, in order to give room to its cavity; and at the same time is harmoniously inflected forwards at the loins and neck, in order to facilitate its balance over the points of support: and it cannot be doubted that these curves contribute to the capability of bending and changing the position of the trunk, without endangering the loss of balance. But the balance of the body is also greatly aided by the breadth of the human pelvis, which, supplying a broad base of support, permits the inclinations of the trunk without the necessity of altering the position of the lower limbs. The lateral breadth of the pelvis, however, throws the heads of the thigh-bones, upon which the weight of the body is transmitted, to some distance on each side of the line that falls through the centre of gravity: and in order to provide a compensating adjustment, the thigh-bones are placed obliquely, inclining towards each other; so that in the upright posture with the feet together they touch at the knees, and the weight is then received upon the heads of the leg-bones or *tibiæ*, which stand perpendicularly under the centre of gravity: and these again are planted upon the arch of the foot or instep, on which the whole weight of the body securely rests. Then, in order to secure in the foot the requisite firmness in standing, we find that it is articulated with the leg at right angles, so that both the heel and toes touch the ground; and the joint is placed nearer the posterior than the anterior part of the foot, so as to increase the base of support in that direction towards which the body tends most to fall: besides which, the weight is here received on the inner side of the foot, where it is most arched, thereby offering not only the advantage of a strong support, but one which is highly elastic, yielding without injury in alighting upon the feet, and acting as a spring in progression. Thus the majestic column of the human form is raised and built up upon its pedestal; and the living pillar, readily maintaining its equipoise, bears aloft its capital, whilst the upper limbs are left free to adilibitive motion. Thus the place of the head, as the corporeal representative of that which perceives and wills; the disposition of the senses therein as the *media* of intelligence, and of the organs of speech as the interpreters of thought; and the arrangement of the upper limbs as the instruments of volition, no longer subservient to mere animal needs, all impress us with the conviction that even the skeleton cannot be intelligible to us without admitting that the human bodily frame was designed for the instrument and dwelling of a being contradistinguished from, and elevated above, all other animals."

It has been well argued by a popular writer of the present day, that, "destitute of either projecting teeth or strong claws, covered neither with hard scales nor with bristles, nor with a thick hide, and surpassed in speed by many of his more powerful antagonists, Man's condition would seem most pitiable, and inferior to that of any other animal; for on all the rest of those to whom she has denied the weapons of attack, Nature has bestowed the means either of defence, or of concealment, or of flight. But Man, by his superior reason, has subdued all other animals. His intellect can scarcely suggest the mechanism which his hands cannot frame; and he has made for himself arms more powerful and destructive than any other creature wields; he has clothed himself in armour and built walls of defence with which he can defy the attacks of any but his fellow-men. Naturally unarmed, Man has conquered the whole armed creation; some he has driven from

aining the brain, and the face, h other. In many cases also it timated by what is called the e of Camper, which is found by line from the most prominent forehead to that of the upper and observe the angle which it another line drawn through the *itorius externus* to the base of the e head being held in a vertical ith a horizontal line. In Man ngle is in the average of Euro- in some children it is a right in some negroes is not more than e adult chimpanzee (which ap- this respect nearest to Man) the is only 35°, and in the orang or In other animals it is still less, n it is increased by the promi- arge frontal sinuses, or by the e shortness of the jaws. In its structure the human brain l other in development of its emispheres, in the number and nt of parts, in the depth and its convolutions, and in the quan- medullary matter in proportion cal.

economy of the human body there rities not less marked than those ture. Perhaps the most charac- he ability which Man enjoys of lmost any part of the globe, and alike in either extreme of natural e. Thus the Greenlanders and have reached between 70° and th latitude, while the negro of the red man of America live equator. But even Europeans, to a temperate climate, can bear ese extremes of cold and heat, as sufficiently proved by the nume- ces in which those who have gone tic expeditions have been obliged

of animals that any species or individual has ever made an advance towards an improvement, or an alteration in its condition: whether solitary or living in herds, the habits of all remain the same; all of the same species appear endowed with the same faculties and dispositions, and each is in mental power the same throughout his life. Contrast with these the progress of Man. In his origin weak, naked, and defenceless, he has not only obtained dominion over all the animate creation, but the very elements are made to serve his purpose. Of the earth he has built his houses, and constructed weapons and the implements of art; he uses the wind to carry him in ships, and to prepare his food; and when the wind will not suit him, he employs fire and water to replace or to resist it. By artificial light he has prevented the inconveniences of darkness; he has stopped and made rivers, and has forced deserts, marshes, and forests alike to bear his food; he has marked out and measured the course of the celestial bodies, till he has discovered from them the size and form of the earth that he himself inhabits."

With regard to the proportions of the human figure, we have no exact knowledge; for the beauty of the best statues is better conceived by observing than by measuring them. Those of antiquity, which were at first copied after the human form, are now become the models of it; nor is there one Man found whose person approaches to those inimitable performances that have thus, in one figure, united the perfections of numbers. It is sufficient to say that, from being at first models, they are now become originals; and are used to correct deviations in that form from whence they are taken. We must not, however, pretend to give the proportions of the human body as taken from these, there being nothing more arbitrary. Some, for instance, who have studied after models,

remarked, that the proportions alter in every age, and are obviously different in the two sexes. In Women the shoulders are narrower, and the neck is proportionally longer, than in Men; the hips are also considerably larger, and the thighs shorter. These proportions, however, vary greatly at different stages of life: in infancy the upper parts of the body are much larger than the lower; and the legs and thighs do not nearly constitute half the height of the whole figure. In proportion as the child increases in age, the inferior parts lengthen, so that the body is not equally divided till it arrives at its full stature.

There is a striking difference in the size of Men. Those are said to be tall who measure from five feet eight to six feet in height; the middle stature is from five feet five to five feet eight; and such as fall short of these proportions are said to be of a diminutive size. It should be observed, however, that the same person is always taller in the morning than on going to bed at night; there being sometimes the difference of an inch. The reason of this is obvious. Between all the joints of the back-bone a glutinous liquor, styled *synovia*, is deposited, which serves, like oil in a machine, to give the parts an easy play on each other: this lubricating liquor, or synovia, according to anatomists, is poured in during the season of repose, and is consumed by exercise and employment; so that after hard labour scarcely any of it remains, but the joints grow stiff, and their motion is painful and uneasy. Hence, therefore, the body diminishes in stature: for this moisture being drained away from between the numerous joints of the back-bone, they lie close on each other, and their entire length is thus very sensibly diminished; but sleep, by restoring the fluid, again swells the spaces between the vertebræ, and the whole is extended to its former dimensions.

A comparison between the strength of Men and other animals may be estimated by various modes. First, by the weight they are able to carry. It is affirmed that the porters of Constantinople carry burdens of nine hundred pounds weight: and Desguliers tells us that, by means of a certain harness, by which every part of a Man's body was proportionably loaded, the person he employed in this experiment was able to support in an erect posture, a weight not less than two thousand pounds. A horse, about seven times our bulk, would be thus able to raise a weight of fourteen thousand pounds, if his strength were in the same proportion. But the fact is, a horse cannot carry on his back above two or three hundred weight; while a Man can support two thousand pounds. But if we reflect for a moment, the reason of this will be apparent: a load on a Man's shoulders is placed to the greatest advantage; while, on the contrary, on the back of a horse it is placed to the greatest disadvantage. Suppose a Man to be standing as upright as possible under this before mentioned enormous weight; then all the bones may be compared to pillars supporting a building, and his muscles will have very little employment in this dangerous duty: however, they are not absolutely inactive; as Man, let him stand ever so upright, will have some bending in different parts of his body. The muscles therefore give the bones a partial assistance, and that with the greatest possible advantage. The greatest force of a horse, and of other quadrupeds, is exerted when the load is placed in such a position that the column of the bones can be properly applied, which is lengthwise. When, therefore, we estimate the comparative strength of a horse, we must not regard what he can carry, but what he can draw: and in this case his amazing superiority over Man is easily discovered; for one horse can draw a load which ten Men would be unable to move.

Among the ancients, strength was a quality of much greater use than at present; as, in time of war, the same Man who had strength enough to carry the heaviest armour, had also ability sufficient to strike the most fatal blow. In this case, his strength was at once his protection and his power. We should not, therefore, be surprised when we read of one Man whose personal prowess rendered him terrible in war, and irresistible, though we may fairly make allowances for its being greatly exaggerated by flattery, or magnified by terror. And, in an age of ignorance, which is ever an age of wonder, mankind, having no just idea of the human powers, were pleased rather to represent what they wished than what they knew; and exalted human strength, to fill up the whole sphere of their limited conceptions. Great strength is an accidental endowment; two or three persons in a country may possess it, and these may institute a claim to heroism; but prodigious strength is not hereditary, like family honours; and when we contemplate the splendid characters of Homer's heroes, who are all represented as the descendants of heroes, we may well believe that they are more indebted to their princely titles, than to their bodily strength and indomitable vigour, for their splendid attributes and their herculean achievements.

There are indeed, in later ages, some instances of amazing strength, which cannot be questioned; but in these Nature is found to pursue her ordinary course. These strong men have originated from the lowest ranks, and gradually risen into notice as their adventitious superiority had more opportunities of being displayed. Among this number may be ranked the Roman tribune who obtained the name of the second Achilles, and who is said to have killed, with his own hand, at different times, three hundred of the enemy; and, when insidiously attacked by twenty-five of his own countrymen, though past his sixtieth year, to have killed fourteen of them before he himself was slain. Of this number, too, was Milo, who, when he stood upright, could not be moved from his place. Pliny also mentions one named Athenatus, who walked across the stage at Rome loaded with a breast-plate which weighed five hundred pounds, and hookins of the same weight. But of all the prodigies of strength recorded in authentic history,

minius, the Roman emperor, may be
ned the chief. Whatever we are told
n is well attested: his character was
ralted not to be perfectly known; and
very strength for which he was cele-
d, at last procured him no less a reward
the empire of the world. Maximinius
upwards of nine feet high, and one of the
proportioned men in the whole empire.
was a Thracian by birth; and, from
a simple herdsman, rose, through the
al gradations of office, till he became
eror of Rome. The first opportunity
offered of exerting his strength, was
presence of a numerous assembly of
ns in the theatre, where he overthrew
e of the strongest men in wrestling,
outstripped two of the fleetest horses in
ing, on the same day. He could draw
ded chariot, which two strong horses
unable to move; and could break the
f a horse with one blow of his fist, and
igh with a kick. In war he was always
ged in the foremost ranks, where he dis-
d feats of activity that could only be
lled by his success; and happy had it
for him and his people, if, from being
idable to his enemies, he had not become
more so to his subjects. He reigned
me time at enmity with all the world;
ankind wishing for his death, yet none
g to strike the blow; and, as if Fortune
resolved that through life he should
nue unconquerable, he was killed at
y his own subjects while asleep.

more modern times we have several in-
es of bodily strength, and not a few of
ing swiftness; but these merely cor-
l perfections are now considered as of
advantage, either in peace or war.
invention of gunpowder in some mea-
levelled all flesh to one standard, and
ght a total change in martial education
gh all parts of the world. In peace
the discovery of new machines almost
day, and the application of the strength
ational animals to the purposes of life,
above all, the wondrous uses of the
-engine, have rendered human strength
value. The boast of corporeal strength
refore consigned to barbarous nations,
, from the deficiency of art, its value is
felt; but in more civilized countries,
oud pre-eminence has fallen in a ratio
ensurate with the progress of art, and
dvancement of intellectual superiority.
Man, though invested with superior
rs, and possessed of more numerous
ages, with respect to his necessities
to be inferior to the meanest animals.
re has introduced him into life with a
r variety of wants and infirmities than
rest of her creatures, unarmed in the
of enemies. Among the many thou-
imaginary wants peculiar to Man, he
wo in common with all other animals,
nevertheless he feels in a greater de-
than they: these are the want of sleep,
unger. The latter is a more destructive
mankind than watchfulness: but,
h fatal without its proper antidote, it
always be removed by food; and to
re this, Man have been known to encounter certain death. Hunger, however, terrible as it is in its approaches, is said to be not proportionately so in its duration; for the pain occasioned by famine decreases as the strength fails, and a total insensibility at length comes to the relief of the wretched sufferer. It is, however, incontestably certain that Man is less able to support hunger than any other animal: nor is he better qualified to bear a state of watchfulness. Sleep, indeed, seems much more necessary to him than to any other creature; as, when awake, he may be said to exhaust a greater proportion of the nervous fluid, and consequently to stand in need of an adequate supply. Other animals, when most awake, are but little removed from a state of slumber: their inert faculties, imprisoned in matter, and rather exerted by impulse than deliberation, require sleep more as a cessation from motion than from thought. But with respect to Man it is far otherwise; his ideas, fatigued with their various excursions, demand a cessation, not less than the body from toil. Fortunately for mankind, sleep generally arrives in time to relieve the mental powers, as well as the bodily frame: but it is often in vain that all light is excluded, all noise removed, and warmth and softness conspire, as it were, to invite sleep; the restless and active mind still retains its former vigilance; and reason, that wishes to resign the reins, is obliged, in spite of herself, to maintain them. In this disagreeable state, the mind ranges from thought to thought, willing to lose the distinctness of perception, by increasing the multitude of images. At last, when sleep makes nearer approaches, every object of the imagination begins to blend with that which lies next to it; a part of their distinction fades away; and ensuing sleep fashions out dreams for the remainder.

In sleep the whole nervous frame is relaxed while the heart and lungs seem more forcibly exerted. This fuller circulation produces also a tension of the muscles: it may be considered as a kind of exercise, continued through the whole frame; and by this the perspiration becomes more copious, though the appetite for food is entirely removed. Too much sleep dulls the apprehension, weakens the memory, and unfits the body for supporting fatigue: too little sleep, on the contrary, emaciates the frame, produces melancholy, and wastes the constitution. A life of study, it is well known, unfits the body for receiving this grateful refreshment; and the approaches of sleep are averted by intense reflection: when, therefore, it comes at last, its continuance should not be hastily interrupted. Sleep is, indeed, by some pronounced to be a very agreeable period of Man's existence, in consequence of the pleasurable dreams which sometimes attend it. This, however, is rather fanciful than just; the pleasure which dreams are capable of conveying seldom reaching to our waking pitch of felicity: the mind often, in the midst of its visionary satisfactions, demands of itself, whether it does not owe them to an illusion? and not unfrequently awakes with the reply.

powerfully impelled by their dominion; performing many of the ordinary duties to which they have been accustomed when awake; and, with a ridiculous industry, completing by night what they had failed to accomplish by day. Numerous instances might indeed be cited to show that the imagination is equally active by night as by day, and that it often involuntarily intrudes where it is least commanded or desired. While awake, and in health, this busy principle cannot much deceive us; it may raise a thousand phantoms before us, build schemes of happiness, or shudder at ideal misery; but the senses are all alive and sound to evince its falsity. Our eyes show us that the prospect is not present: our hearing and our touch depose against its reality; and our taste and smelling are equally vigilant in detecting the imposition. Reason, therefore, at once determines on the cause; and the fleeting intruder, Imagination, is restrained or banished from the mind. But it is otherwise in sleep: the senses being as much as possible at rest, having lost their peculiar functions, the imagination is then left to riot at large, and to lead the understanding captive. Every incursive idea then becomes a reality; and the mind, being destitute of every power that can correct the illusion, receives them for truths.

But we fear we have trespassed too long on this part of our subject; we therefore hasten from the consideration of what may be thought ideal and imaginary, to that which is actual and manifest. Every object in nature has its improvement and decay. The human form no sooner arrives at maturity, than it instantly begins to decline. The waste is at first insensible, and frequently several years revolve before we perceive any considerable alteration: but we ought to feel the weight of our years better than their number can be estimated by

although in the different stages
they are of very different ca
infancy they are capacious, an
flows through the bones with
same facility as through the oth
In manhood their size is greatly
the vessels are almost imperceptl
circulation through them is pr
slow. But in the decline of li
which meanders through the bo
contributing to their growth,
tends to increase their rigidit
portion as we advance in year
the cartilages, the membranes
the skin, and every fibre of th
come more solid, hard, and dry
shrinks, every motion becomes
the circulation of the fluids is pe
less freedom; perspiration dim
secretions alter; the digestion b
and laborious: and the juices
serving to convey their accust
ment, those parts may be sai
longer when the circulation e
the body dies by little and li
functions are weakened by deg
driven from one part of the frame
universal rigidity prevails; an
last closes the scene. When
stamina are good, life may perh
longed for a few years, by mod
passions, by temperance, and by
ness: but no human art can
period of life to any considera
It is apparent, indeed, that the
life has no absolute dependenc
manners, customs, or the quali
ticular food: much, it is true,
cribed to the quality of the air;
rely upon it that, if luxury
perance be excepted, nothing ca
laws of mechanism which regula
ber of our years.

Well may it be said, that Ma

TUS. A genus of herbivorous
imals, familiarly called Sea Cows,
lyassociated with the order *Cetacea*.
of the *Manatus* is of an oblong

ATUS.—(MANATUS AUSTRALIS.)

minated by a lengthened oval fin:
ly measures six or seven feet in
sometimes grows to an enormous
its paddles or fins exhibit rudi-
nails, by the aid of which the un-
imal drags its body along on the
verse on the herbage that grows
ar the banks of the great rivers to
resorts. The skin of the Manatus
rkish colour, very tough and hard,
f inequalities, like the bark of an
on it are sprinkled a few bristly
nt an inch in length. The eyes
lingly small in proportion to the
e animal. It has no external ears,
two orifices, scarcely large enough
a quill; the tongue is pointed, and
small; the mouth is destitute of
furnished with two solid white
ending the entire length of both

AND PART OF SKELETON OF THE MANATUS.

th serve instead of grinders; the
mible; and near the junction of
ws the mouth is full of white
istles, answering the same purpose
nus in whales, to prevent the food
ng out with the water. The lips
thick-set with bristles, serving, in-
uth, to cut the strong roots of the
nats, which, floating ashore, point
ifinity of these animals.

RILL. The great blue-faced Ba-
e BABOON.]

)-FISH. [See POLYNEMUS.]

; PANGOLIN; or SCALY ANT-
The Linnæan genus *Manis* con-
ists *singular animals, known also*

by the name of Pangolins and Scaly Ant-eaters; and are limited to the warmest parts of Asia and Africa. They resemble the *Myr-*

SCALY ANT-EATER.
(MANIS MACROCAUDATA.

mecophaga, or Hairy Ant-eaters, in having a very long extensible tongue, furnished with a glutinous mucus for securing their insect food, and in being destitute of teeth; but differing wholly from them in the body, limbs, and tail being covered with a panoply of large, imbricated scales, overlapping each other, after the manner of lacertine reptiles; and also in being able to roll themselves up when in danger, by which their trenchant scales become erect, and present a defensive armour sufficient to repel the assaults of the most ferocious of their enemies. They are quite harmless in their nature, entirely subsist on ants, termites, &c., and differ from the true Ant-eaters of South America in little else than in being provided with this scaly integument. They are remarkable for the strength and number of their caudal vertebræ; and in a general view of the animal kingdom, they may be considered as having the appearance of forming a kind of link between the proper viviparous quadrupeds and the Lizards.

The LONG-TAILED MANIS. (*Manis tetradactyla.*) This species is generally upwards of two feet in length, and the tail is more than twice as long as the body: the head is small, the snout narrow; the whole body, except the under part, covered with broad but sharp-pointed scales, which are striated throughout their whole length. The legs are very short; scaled like the body; and on each of the feet are four claws, those on the fore feet being stronger than those on the hind. The colour of the whole animal is an uniform deep brown, with a cast of yellow, and a glossy surface. It is a native of Africa.

The SHORT-TAILED MANIS. (*Manis pentadactyla.*) In this species the head is small as in the former, but the tail is much thicker and shorter, being not so long as the body, wide at the base, gradually tapering, but terminating very obtusely. The feet are furnished with five toes each, those on the fore feet, except the exterior one, which is very small, being extremely strong. The scales differ in shape from those of the preceding, being much larger and wider in proportion to the body and tail: they are also much harder, and so impenetrable when the animal rolls itself up, that when the tiger, panther, or hyæna attempts to force it, the *Manis* remains perfectly secure, and the assailant suffers for his temerity. The Manis chiefly inhabits the most obscure parts of

elongated body; the anterior legs of enormous length; short palpi, terminating in a point; the tarsi five-jointed, and the wings plaited longitudinally.—These insects frequent trees and plants; and the forms and colours of their wings and bodies are so like the leaves and twigs which surround them as to give them remarkable power to elude observation.

The PRAYING MANTIS (*Mantis religiosa*) is of a beautiful green colour, nearly three inches in length, of a slender shape, and in its general sitting posture holds up the two fore-legs, slightly bent, in an attitude resembling that of a person when at prayer; in which position it will some-

PRAYING MANTIS.—(MANTIS RELIGIOSA.)

times remain motionless for several hours. It is termed by the French *prie-Dieu*. Its food consists of flies and other insects, which it is exceedingly dexterous in catching and retaining. "The monkish legends tell us that St. Francis Xavier, seeing a Mantis moving along in its solemn way, holding up its two fore-legs as in the act of devotion, desired it to sing the praises of God; whereupon the insect carolled forth a fine canticle! (*Ins. Arch.*, p. 63.) Mouffet, also, informs us, that 'so divine a creature is this esteemed, that if a childe ask the way to such a place, she will stretch out one of her feet, and shew him the right way, and seldom

veneration by some of the
tribes.—But of all the Ma
most singular in its appearan
gongylodes, which, from its
the grotesque form of its bo
its dried state, seems to re
junction of several fragme
stalks, &c.

MANTISPA: MANTISP
and family of insects belong
Neuroptera. They appear t
allied to the *Hemerobiidæ*
character of the veins of t
species are but of small size,
and widely dispersed throu
They chiefly reside upon
structure of the fore legs as
to indicate that their habits

MARECA. A genus of I
containing the Widgeon (*M*
[which see.]

MARGARITACEÆ. A
lusca, containing several int
among which is the *Aviculi*
the shell of which produces
Pearls, as well as the grea
Mother-of-Pearl; the latte
the nacreous interior of the s
are separate formations of
stance, deposited by the ma
Pearls are generally produc
where the attachment of the
causes a roughness in the
dual change which takes pl
tion of this muscle, in acco
growth of the animal, exa
ment of the pearl; and it is
imbedded in the substance o
the motion of whose fibres it
seems chiefly occasioned. It
of Pearls is by no means
species; for any shell, univ

MARGINELLA. A genus of Molluscous animals, inhabiting an oval, smooth, shining shell, often handsomely coloured; the spire exceedingly short; the right lip having a thick margin; pilalts nearly equal in size; and no operculum. The head of the animal is very distinct, with a small proboscis, and two tentacula having eyes at the base. It covers the greater part of the shell with the mantle, and by continually depositing vitreous matter gives it a bright polish, which, together with the delicately neat arrangement of colours in most species, renders them very beautiful.

MARIKINA. An appellation given to a Brazilian species of Monkey, furnished with a mane, and having a tuft of hair at the end of its tail. It is the *Jacchus Rosalia* of naturalists.

MARMOT. (*Arctomys.*) A genus of Rodent animals of which there are several species. The Marmots in their dentition are nearly allied to the squirrels, though in their general form they are very dissimilar to those active little quadrupeds, and have been generally classed with the rats. They have five molar teeth on each side of the lower jaw; short legs; a rather short tail; heavy body; and a short flat head: four toes on the fore feet, and five on the hinder. They live in communities; have extensive burrows on the sides of high and cold mountains; and pass the winter in a dormant state.

The ALPINE MARMOT (*Arctomys Alpinus*) is about the size of a rabbit; of a grayish yellow colour, approaching to brown towards the head; and has a short tail. This

MARMOT.—(ARCTOMYS ALPINUS.)

species inhabits the mountains of Europe (particularly those of the Alps and Pyrenees), just below the region of perpetual snow; and feeds on insects, roots, and vegetables. They live in large societies; and when they are eating, they post a sentinel, who on the approach of any danger gives a shrill whistle, when they all retire into their burrows, which are contrived with great art, and are well lined with moss and hay. In these retreats they remain in a torpid state from the autumn till April. In fine weather they are seen sporting about the neighbourhood of their burrows; they delight in basking in the sunshine, and frequently assume an upright posture, sitting on their hind feet. Before they retire to their winter quarters they are observed to grow excessively fat; and, on the contrary, appear greatly emaciated on first emerging from them. In a domestic state the Marmot will eat almost any kind of animal or vegetable food.

There are many Marmots inhabiting North America which have been considered as belonging to the sub-genus *Spermophilus*. The most celebrated of these is the PRAIRIE DOG. (*Arctomys ludovicianus.*) The name of Prairie Dog has been given to it from a supposed similarity between its warning cry and the barking of a small dog. They live in large communities; their villages, as they are termed by the hunters, sometimes being many miles in extent. The entrance to each burrow is at the summit of the mound of earth thrown up during the progress of the excavation below. The hole descends vertically to the depth of one or two feet, after which it continues in an oblique direction. This Marmot, like the rest of the species, becomes torpid during the winter, and, to protect itself against the rigour of the season, stops the mouth of its hole, and constructs a neat globular cell at the bottom of it, of fine dry grass, so compactly put together as almost to form a solid mass. In the "Travels in North America" by the Hon. C. A. Murray, we find an account of this animal. Speaking of an extensive and desolate prairie through which he was passing, is the following description of the "Prairie Dog." "In this waste there was not either bird or beast to be seen, except Prairie Dogs. I do not know how these little animals obtained this absurd appellation, as they do not bear the slightest resemblance to the canine species, either in formation or habits. In size they vary extremely, but in general they are not larger than a squirrel, and not unlike one in appearance, except that they want his bushy tail; the head is also somewhat rounder. They burrow under the light soil, and throw it up round the entrance to their dwelling like the English rabbit: on this little mound they generally sit, chirping and chattering to one another, like two neighbour gossips in a village. Their number is incredible, and their cities (for they deserve no less a name) full of activity and bustle. I do not know what their occupations are; but I have seen them constantly running from one hole to another, although they do not ever pay any distant visits. They seem on the approach of danger always to retire to their own homes: but their great delight apparently consists in braving it, with the usual insolence of cowardice when secure from punishment; for, as you approach, they wag their little tails, elevate their heads, and chatter at you like a monkey, louder and louder the nearer you come: but no sooner is the hand raised to any missile, whether gun, arrow, stick, or stone, than they pop into the hole with a rapidity only equalled by that sudden disappearance of Punch, with which, when a child, I have been so much delighted in the streets and squares of London." Their holes seem to be tenanted also by a species of owls (*Strix cunicularia*); and this apparently discrepant

couple live together united not in the bonds of matrimony but of friendship.

There are several other American species. The QUEBEC MARMOT (*Arctomys empetra*), a solitary animal, whose burrows are almost perpendicular, and situated in dry spots, at some distance from the water. The WOODCHUCK (*Arctomys monax*); they make their burrows in the sides of hills, which extend a considerable distance, and terminate in chambers lined with dry grass, leaves, &c. They are easily tamed, and are very cleanly.

Besides the foregoing, many species of the Marmot are found in the north of Europe and Asia: they swarm in the Ukraine, about the Boristhenes, in the southern desert of Great Tartary, and in the Alcaic mountains south of the Irtis. They burrow, and form magazines of corn and nuts; sit like squirrels while they eat; and generally bring forth from five to eight young. They are both herbivorous and carnivorous.

MARMOZET, or OUISTITIS. (*Jacchus.*) A genus of American monkeys distinguished from the rest by the absence of the additional molar, and by the sharpness and crookedness of their nails. The thumb is not opposable, being placed in the same line with the other fingers; and that of the hind feet is very short. The tail is large, and thickly covered with hair; but it is not prehensile; and in many species it is marked by transverse bars, giving it a very elegant appearance: several are also distinguished by tufts of hair projecting from the sides of the head. They are very agile in their movements, and extremely cautious and wary; exhibiting a degree of wildness and distrust even when in confinement. They show much instinctive sagacity in their search for insect food.

MARSUPIALIA, or MARSUPIALS. A singular family of the order *Carnivora*, in the class *Mammalia*; and so called from the females having a pouch (*marsupium*), or temporary abode for the young immediately after birth, and into which they retreat long after they can walk, whenever they are apprehensive of danger. Two particular bones, called the marsupial bones, attached to the pubis, and placed amidst the abdominal muscles, support this pouch. Professor Owen says, "they assist in producing a compression of the mammary gland, necessary for the alimentation of a peculiarly feeble offspring, and they defend the abdominal viscera from the pressure of the young as they increase in size, during their mammary or marsupial existence, and still more when they return to the pouch for temporary shelter." It should moreover be observed, that these marsupial bones are found likewise in the male, and even in species where the pouch-formed fold of skin is scarcely perceptible. New South Wales abounds in marsupial animals, but they are found also in America and the Asiatic islands. [See KANGAROO; OPOSSUM.]

MARTEN. (*Mustela foina.*) This elegant and lively animal, whose agile and graceful motions are not excelled by any of the weasel tribe, resides in woods, and chiefly on birds and small anim general length from nose to tail i foot and a half, and the tail is ten in The female breeds in hollow trees, from three to seven young at a time at least two litters in a year. very destructive to game of every k to all sorts of domestic poultry, they will also feed on rats, mice, an are very fond of honey, and will eat seeds and grain. The Marte dark tawny colour, with a white thr the belly is of a dusky brown: t bushy, and of a darker colour than parts; the ears are moderately l rounded; muzzle pointed; and bright and lively. It is very wild tameable if captured when full g if taken young is susceptible of cility. It has two sorts of fur; which is very long, and brown of shades in different parts of the body inner, which is extremely soft, short light yellowish gray colour.

The PINE MARTEN (*Mustela* inhabitant of the woody district northern parts of America, from the to the Pacific; it is also found a region of Mount Caucasus, as we Sweden, Norway, &c. It very cl sembles the preceding, but may tinguished by its smaller size, leg finer, thicker, and more glossy fur, the throat being marked with a brow spot. The Pine Marten preys rabbits, partridges, &c. It never

PINE MARTEN.—(MUSTELA MAR

houses, as the common Marten does; but confines itself altogethe woods and fields. Its fur is far su quality to that of the former spe the skins form a great article of co When this animal is pursued, and i cut off, it shows its teeth, erects arches its back, and hisses like a borrows in the ground, carries it about six weeks, and brings forth to seven in a litter about the latte April. Both this and the former have a kind of musky smell.

PENNANT'S MARTEN. (*Mustela densis.*) This is also a native of th ern parts of America. It is a lar stronger animal than the Pine Mart in the woods, preferring damp place and climbs with facility. It brin once a year, from two to four you sought for the skin, of which some

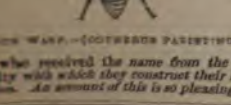
numbers are every year exported by the fur traders.

MARTIN. [See SWALLOW.]

MASON-BEE. A species of the genus *Osmia*, remarkable for constructing its nest of agglutinated sand, fixing it on the sides of walls, &c., or availing itself of some cavity or suitable projection for that purpose. This species constructs six or eight cells near each other, though irregularly placed; and the female, having deposited an egg, with a supply of honey and pollen in each, covers the whole and fills the spaces between the cells with the same kind of material she had used in constructing them; the whole having the appearance of a dab of mud, which might have been placed there by accident. This vivid cement, or mortar, which is at first soft, soon becomes as hard as stone; and the eggs being laid in it, undergo the same metamorphosis as those of the common bees. —Several species select the deserted shells of snails, in the spiral tubes of which they construct their nests. The bee having found a shell suitable to her purpose, deposits an egg, together with a suitable supply of pollen and honey, at the extremity of the tube; the space occupied thereby being not quite half an inch in length: this space she closes by a thin partition, which is composed of shredded leaves or moss, repeating the operation until she has constructed the required number of shells; she next closes up the entrance to the tube, for which purpose she collects pellets of earth, small pieces of stick, pebbles, &c., which, being mixed with some liquid secreted by the animal, form a secure protection to her works. The larva having consumed the store laid up by the provident parent, spins a cocoon of a toughish texture and of a dark brown colour; and in due time the perfect insect makes its appearance.

The genus *Osmia* contains many species, each having a favourite locality for its nest-building operations, but all of them varying their economy in accordance with accidental circumstances. Some of these bees are red, and others black; but they are all nearly of the same size, being about the length of drones, though not so thick. The black Mason-bees have stings; but the red, being males, have none.

MASON-WASP. (*Odynerus murarius, parietinus*, &c.) Hymenopterous insects, whose nests may be found in this country in most sandy banks exposed to the sun,



MASON WASP.—(COTTERELL PAINTINGS.)

and who received the *name from the ingenuity with which they construct their habitation. An account of this is so pleasingly* given by Messrs. Kirby and Spence in their "Introduction to Entomology," that we take the liberty of extracting it. "This insect (*O. murarius*) bores a cylindrical cavity from two to three inches deep, in hard sand which its mandibles alone would be scarcely capable of penetrating, were it not provided with a slightly glutinous liquor which it pours out of its mouth, that, like the vinegar with which Hannibal softened the Alps, acts upon the cement of the sand, and renders the separation of the grains easy to the double pickaxe with which our little pioneer is furnished. But the most remarkable circumstance is the mode in which it disposes of the excavated materials. Instead of throwing them at random on a heap, it carefully forms them into little oblong pellets, and arranges them round the entrance of the hole so as to form a tunnel, which, when the excavation is completed, is often not less than two or three inches in length. For the greater part of its height this tunnel is upright, but towards the top it bends into a curve; always, however, retaining its cylindrical form. The little masses are so attached to each other in this cylinder as to leave numerous vacuities between them, which give it the appearance of filagree-work. You will readily divine that the excavated hole is intended for the reception of an egg, but for what purpose the external tunnel is meant is not so apparent. One use, and perhaps the most important, would seem to be to prevent the incursions of the artful Ichneumons, Chrysides, &c., which are ever on the watch to insinuate their parasitic young into the nests of other insects; it may render their access to the nest more difficult; they may dread to enter into so long and dark a defile. I have seen, however, more than once a Chrysis come out of these tunnels. That its use is only temporary is plain from the circumstance that the insect employs the whole fabric, when its egg is laid and store of fruit procured, in filling up the remaining vacuity of the hole; taking down the pellets, which are very conveniently at hand, and placing them in it until the entrance is filled." Speaking of the care which Mason-wasps take for their young, the same authors say: "One species not only incloses a living caterpillar along with its eggs in the cell, which it carefully closes, but at the expiration of a few days, when the young grub has appeared and has consumed its provision, re-opens the nest, incloses a second caterpillar, and again shuts the mouth: and this operation it repeats until the young one has attained its full growth."

MASTIFF. (*Canis molossus.*) This noble and powerful variety of the Canine race is distinguished by a large head and broad muzzle, very thick pendulous lips, moderate sized dependent ears, heavy brow, a strong and well-proportioned body, and the tail rather full. Like most of the larger *kinds of* dogs, although extremely vigilant *over any* thing committed to his charge, *he will* not abuse the power with which he is intrusted, nor call it into action unless pro-

voked by injuries. In this he shows a disposition the very reverse of that of the Bull-dog, who seldom waits for aggression, but savagely and insidiously makes the first

THIBET DOG.

attack. So famous was great Britain for its Mastiffs when the Romans were its masters, and in such high estimation were their strength, courage, and sagacity held by the Roman emperors, that a resident officer was appointed, for the purpose of breeding them, and transmitting to the imperial city such as he thought capable of sustaining the combats in the amphitheatre. Strabo says that the Gauls trained British mastiffs for war, and used them in their battles. According to Dr. Caius, three were a match for a bear, and four for a lion.

A remarkable variety, if not a distinct species of this animal, is the Thibet Dog.

MASTODON. A genus of extinct quadrupeds, the remains of which in a fossil state show that it was a pachydermatous animal allied to the elephants. It has received its name from the conical projections on the surfaces of the molar teeth. Some of these were natives of the Old World; but by far the largest in size have been found on the American continent. The skeleton of one, termed the *Mastodon giganteus*, which was lately exhibited in London, under the name of the *Missouri Leviathan*, and is now in the British Museum, must have considerably exceeded in its dimensions the largest elephants now existing. In some parts of North America the fossil remains of this stupendous animal are abundant, particularly in the saline morass popularly termed the Big-bone Lick, in the northern part of Kentucky. There are no traces within the period of tradition or history of the existence of these animals as a living genus. When and how they perished, if ascertained at all, must be revealed by geological data. It is worthy of remark, that the skeletons seem to have been unmoved since the death of the animal; some, in fact, which were found near the banks of the great rivers, appearing in a vertical position, as if they had sunk down or been imbedded in the mud.

Among many curious traditions which were believed by the native Indians concerning this gigantic animal and its destruction, the following may be noticed: The Shawnee Indians believed that with these stupendous quadrupeds there existed men of proportionate dimensions, and that the Great Being destroyed both with thunderbolts. Those of Virginia state that as a troop of these terrible quadrupeds were destroying the deer, the bisons, and the other animals created for the use of the Indians, the Great Man slew them all with his thunder, except the big Bull, who, nothing daunted, presented his enormous forehead to the bolts, and shook them off as they fell, till, being at last wounded in the side, he fled towards the great lakes, where he is to this day.

MAY-FLY. [See EPHEMERA.]

MEADOW BROWN [BUTTERFLY]. A name given by collectors to Butterflies of the species *Hipparchia janira*.

MEAL [MOTH]. The name given to the *Pyralis farinalis*.

MEDUSA. The name given to a genus of marine animals, in the class *Acalepha*, which present to the eye, when floating in their native element, an umbrella-shaped disc, from beneath which a number of tentacula or filaments depend. In the central part of the concave side of this disc is the stomach, in the middle of which is the mouth, opening downwards, and surrounded by four leaf-like tentacula. The Medusæ are commonly known by the name of "sea-blubber," "jelly-fish," &c. They receive nutriment by means of innumerable minute pores; and in their stomachs are found small crustacea, mollusca, and even fishes. At certain seasons many of them sting and inflame the hand that touches them; and their tentacula seem to possess considerable muscular power, capable of drawing towards the mouth almost any thing that comes within their reach. They swim by muscular contraction of the margins of the disc. Many of the Medusæ are phosphorescent, and give that luminous appearance to the sea which has been so often described and variously accounted for. [See ACALEPHÆ.]

MEDUSA'S HEAD. A name sometimes applied to those species of Star-fishes which have the rays very much branched. [See EURYALE.]

MEGACEPHALON. The name of a singular genus of birds allied to the *Tu*[illegible] and *Leipoa*, and doubtless resembling [illegible] genera in habits. One species (*M.* [illegible]) is known; it is a native of Celebes, but [illegible] in collections.

MEGACHILE. A genus of bees [illegible]larly named *leaf-cutters*, from their [illegible] cutting off pieces of the leaves of [illegible] elm, and other trees, and using the [illegible] construction of the cases in which [illegible] posit the pollen and honey necessary [illegible] food of the larvæ. There are [illegible] cies; but one of them will be [illegible] cient for us to describe. *Megachile* [illegible] *biella*: the WILLOW BEE. [illegible] about half an inch long; [illegible] the face densely clothed with [illegible] the vertex with pale ferruginous [illegible] antennæ have the apical segment [illegible]

and when viewed in front broader than the rest: the cheeks and under side of the thorax are clothed with an ashy pubescence; above with yellow ferruginous hair: the femora are yellow, with three black stripes in front: the tibiæ are black above, yellow at their extreme apex: tarsi palmated, and all the joints fringed with white silvery hairs. These insects exhibit wonderful mechanical ingenuity in the construction of their pollen-cases; the same species sometimes choosing trees, posts, or rails in a decaying state, at other times burrowing in banks, or in the mortar of old walls, or availing itself of the interstices from which the mortar has fallen out. Mr. F. Smith tells us that on one occasion he split off a large portion of an old willow tree, which was perforated in all directions by the bees, and in doing so, laid open to view a channel, about eight inches long, containing seven cells, constructed of rose-leaves. These he preserved for some weeks; at length a male bee made its escape, and on examination, it proved to have quitted the upper cell. The rest followed in regular succession, three other males, and three females. Mr. Smith observes, that he is not acquainted with any species of this genus which continues its burrow to the outside of the substance in which it is constructed, as a means of escape for its young brood. The Leaf-cutter Bees are subject to the intrusion of parasites, belonging to the genus *Coliurys*.

"The process which one of these bees employs in cutting the pieces of leaf that compose her nest is worthy of attention. Nothing can be more expeditious: she is not longer about it than we should be with a pair of scissors. After hovering for some moments over a rose-bush, as if to reconnoitre the ground, the bee alights upon the leaf she has selected, usually taking her station upon its edge, so that the margin passes between her legs. With her strong mandibles she cuts without intermission in a curve line so as to detach a triangular portion. When this hangs by the last fibre, lest its weight should carry her to the ground, she balances her little wings for flight, and the very moment it parts from the leaf flies off with it in triumph; the detached portion remaining bent between her legs in a direction perpendicular to her body. Thus without rule or compasses do these diminutive creatures cut out the materials of their work into portions of an ellipse, into ovals or circles, accurately accommodating the dimensions of the several pieces of each figure to each other. What other architect could carry impressed upon the tablet of his memory the entire idea of the edifice which he has to erect, and, destitute of square and plumb-line, cut out his materials in their exact dimensions without making a single mistake? Yet this is what our little bee invariably does. So far are human art and reason excelled by the teaching of the Almighty."—*Kirby and Spence's Entomology.*

MEGALOSAURUS. The name *given to an extinct genus of lizard-like reptiles, of gigantic size, discovered in the oolitic slate* of Stonesfield, near Oxford. Some of them measured from forty to fifty feet in length; but no *perfect* skeleton has been found. The generic character of this animal is founded by Dr. Buckland chiefly on the structure of the teeth, which he describes as presenting "a combination of mechanical contrivances analogous to those which are adopted in the construction of the knife, the sabre, and the saw." These teeth were arranged in a pretty close series, in sockets, along the alveolar border of the jaws; and when it is remembered that, according to the measurement of the imperfect remains which have been discovered, the Megalosaurus was about seventy feet in length, the predaceous powers of this carnivorous extinct monster must have been truly appalling.

MEGALOTIS. A genus of Mammalia allied to the family *Canidæ*. [See FENNEC.]

MEGATHERIUM. This name has been given by Cuvier to an extinct genus of gigantic quadrupeds, whose structure bears a great resemblance to that of the Bradypus or Sloth family. Several remains of the Megatherium have been found in South America: the one described by Cuvier was in a fossil state, and found a hundred feet below the surface of a sandy soil, in the vicinity of the river La Plata; other specimens, however, have since been found on the same continent, but not in so complete a state. The skeleton was twelve feet (French) long, by six feet in height; the thigh-bones excessively thick, and the leg-bones still more

SKELETON OF THE MEGATHERIUM.

so in proportion: the fore limbs were longer than the hind, and there were three enormous claws on the fore feet, but only a single one on the hinder. The head was relatively small; in the upper jaw were five teeth on each side, and in the under jaw four—all molars. "As to its place in the system of quadrupeds," Cuvier observes, "it is perfectly marked by the sole inspection of the ordinary indicatory characters, that is, the claws and teeth. These show that it must be classed in the family of unguiculated quadrupeds destitute of cutting teeth; and, in fact, it has striking relations with these animals in all parts of its body. The great thickness of the branches of the lower jaw, surpassing even that of the elephant, seems to prove that the vast animal was not content with leaves, but, like the elephant and rhinoceros, broke and ground the branches themselves, its close and flat-crowned teeth appearing very proper for that purpose. The position of the bones of the nose, having some analogy

with that of the elephant and tapir, would induce a suspicion that the animal wore a trunk, but it must have been very short, since the length of the head and neck together equals that of the fore legs. However this be, we find in the absence of canine teeth and the shortness of the muzzle, sufficient characters to constitute a new genus in the family of the *edentated*, which ought to be placed between the Sloth and the Armadillo;

MEGATHERIUM RESTORED.

since to the shape of the head of the former, it joins the teeth of the latter. It would be necessary to know particulars of which a skeleton cannot inform us, such as the nature of the teguments, the form of the tongue, the position of the mammæ, &c., in order to determine to which of these it approached the most. In the mean time, I thought I might give it the generic name of *Megatherium*, and the trivial one of *Americanum*. It adds to the numerous facts which apprise us that the animals of the ancient world were all different from those we now see on the earth; for it is scarcely probable that, if this animal still existed, so remarkable a species could have hitherto escaped the researches of naturalists. It is also a new and very strong proof of the invariable laws of the subordination of characters, and the justness of the consequences thence deduced for the classification of organized bodies; and under both these views it is one of the most valuable discoveries which have for a long time been made in Natural History."

Remains of a similar animal were collected by Sir Woodbine Parish, in the river Salado, which runs through the flat alluvial plains to the south of the city of Buenos Ayres. It was found there after a succession of three unusually dry seasons, which lowered the waters in an extraordinary degree, and exposed part of the pelvis to view, as it stood upright in the bottom of the river. This animal apears to have been larger than the one described by Cuvier. The thigh bone was twice the thickness of that of the largest elephant; the fore foot measured more than a yard in length, and more than twelve inches in width, and was terminated by an enormous claw; and the upper part of the tail was two feet wide. [See the articles SLOTH and MYLODON.]

MEGAPODIUS. A genus of Rasorial birds; so called from their large feet, which serve an important part in their economy. The eggs of these birds are very large; we may mention

The DUPERREY'S MEGAPODIUS (*Megapodius Duperreyii*), which inhabits the umbrageous forests of New Guinea. In size it is rather less than the partridge: the neck is well clothed with feathers; and a very thick crest, raised towards the occiput, covers the head: the wings are concave, an inch longer than the tail, and terminated in a point; tail sub-oval, pointed, and very short; legs grayish, and feathered down to the tarsi. The neck, throat, belly, and lateral parts, are of a gray slate-colour: the feathers of the back and the wing-coverts are large, and of a ruddy yellowish brown: rump, upper part of the tail, and vent-feathers ochreous red. The bird is timid, runs very fast among the bushes, like a partridge in standing corn, and utters a feeble cluck.

The MEGAPODIUS TUMULUS. [See JUNGLE-FOWL.]

MELANDRYIDÆ. A family of Coleopterous insects, specially distinguished by the large size of the three terminal joints of the maxillary palpi: the body is generally elongate and sub-cylindric or depressed; the mandibles are short and often bifid at the tips; and the tarsal claws are entire: the penultimate joint of the tarsi is generally bilobed in the two anterior pair of legs; in those species in which it is entire, the hind legs are formed for leaping, being long and compressed with slender tarsi. These insects chiefly reside beneath the bark of trees.

MELEAGRIS. A genus of Rasorial birds, which contains two species, the COMMON TURKEY (*M. gallopavo*) and the still more splendid HONDURAS TURKEY (*M. ocellata*.) [See TURKEY.]

MELITÆA. A genus of Butterflies belonging to the family *Nymphalidæ*, and distinguished by their antennæ, which have a wide flat club; the eyes are naked. There are several British species, for which we must refer to such works as Stephens, Wood, and Humphreys and Westwood: we particularize two.

MELITEA SELENE, APRIL FRITILLARY, or SILVER-SPOT BUTTERFLY. This is a well-known and beautiful insect, occurring on heaths and in woods throughout the south and west of England; two broods being produced, one in May, and another in August. The wings above are pale fulvous, spotted with black, and a marginal series of dusky spots, bounded by a slender black line: the ground colour of the posterior wings is ferru-

SILVER-SPOT BUTTERFLY.
(MELITEA SELENE.)

ginous, with a brighter band at the base, which is bordered on each side with a row of irregular silver and yellow spots, and having a large black ocellus in the centre, with a ruborous pupil; the vent of the wing is

ruginous and yellowish, with
pots, placed transversely; on
anterior margins a striga

SCLANE—UNDER SIDE.

ack dots, and six silver spots,
ly with black: the anterior
nctly varied with black, the
being strongly tipped with
nd having a distinct row of
pots. Caterpillar black, with
stripe; spines half-yellow.

A ARTEMIS, GREASY FRITIL-
OUS BUTTERFLY. This insect
earance towards the end of
more local than most of its
he neighbourhood of London,

LLARY.—(MELITEA ARTEMIS.)

ly abundant near Brighton;
tifully also in various other
uth and west of England, but
e places rarely seen. The
re reddish-fulvous, undulated
nd spotted with yellow; the
ed with three distinct bands,
bearing a striga composed of
seven black dots: the under

ARTEMIS—UNDER SIDE.

anterior wings is glossy, with
us dashes at the tip: the pos-
neath are fulvous, with three
low bands, slightly edged with
en the outer bands is a row
dots, edged with ochraceous;
band is broken and irregular:
yellowish: the body and an-
The Caterpillar is black
lowish beneath, with a row of
white dots down the back and on each side: head and spines black; legs red-brown. It feeds on the *Scabiosa succisa*, plantain, &c., and appears in September: about the end of April it changes to a pale green chrysalis, spotted with black, and having yellow tubercles at the extremity of the body. In about fifteen days the butterfly is produced.

MELIPHAGA. A genus of Tenuirostral birds belonging to the *Meliphagidæ* family, very many species of which will be found described in the great work of Mr. Gould on the Birds of Australia, the country where they abound; of these we may specify

The MELIPHAGA NOVÆ-HOLLANDIÆ, or NEW HOLLAND HONEY-EATER. This is one of the most abundant and familiar birds inhabiting the colonies of New South Wales, Van Diemen's Land, and South Australia; breeding among shrubs and flowering plants, and being common, in fact, on the sandy districts wherever the Banksias abound. "Nor is it the least attractive of the Australian Fauna; the strikingly contrasted markings of its plumage, and the beautiful appearance of its golden-edged wings, when passing with its quick, devious, and jumping flight from shrub to shrub, rendering it a conspicuous and pleasing object."—*Gould.* It usually rears two or three broods during the course of the season, which lasts from August to January. The nest is composed of small wiry sticks, coarse grasses, and strips of bark; the inside lined with the soft woolly portion of the blossoms of small ground plants. It lays two, and sometimes three eggs, of a pale buff colour, spotted with deep chestnut-brown at the larger end. Its food principally consists of the juices and pollen of flowers; but it also feeds on fruit and insects.

The MELIPHAGA SERICEA, or WHITE-CHEEKED HONEY-EATER. This species appears to be more confined to an eastern locality in Australia than the one above described, found in more open districts, and less seen in the interior of the country. When perched on the trees it is a most showy bird, its white cheek-feathers and contrasted tints of colouring rendering it very conspicuous. It is readily known from the *Meliphaga Novæ-Hollandiæ* by its white cheeks and the absence of white tips to the tail-feathers.

The MELIPHAGA AUSTRALASIANA, or TASMANIAN HONEY-EATER. This species, which is smaller than either of the preceding, and less brilliantly marked, is abundantly dispersed over every part of Van Diemen's Land, preferring such parts of the forests as are clothed with a thick brush of dwarf shrubby trees, growing beneath the more lofty gums, where numbers of these birds may be heard pouring forth their loud, shrill, and liquid notes in quick succession. It also resorts to the more open hills, where it finds thick beds of the *Epacris impressa*, whose bright red and white heath-like blossoms afford it an abundant supply of food. But, independently of the honey it obtains from the tube of every floret, which

it rifles by means of its slender brush-like tongue, it feeds on various kinds of insects. The nest is placed on a low shrub near the ground; it is of a circular form, outwardly constructed of the inner rind of the stringy bark gum-tree, generally lined with fine grasses. The male has a black stripe passing from the base of the bill through the eye, and a lunar-shaped black mark down each side of the breast; a narrow stripe above the eye and one behind the lunar marks on the breast white; all the upper

TASMANIAN HONEY-EATER.
(MELIPHAGA AUSTRALASIANA.)

surface dusky black; wings blackish brown, the primaries and secondaries margined externally with golden yellow; tail feathers brownish black, fringed with golden yellow at the base, the two lateral feathers having a long oval spot of white on their inner webs at the tip; throat and chest white, flanks and under tail-coverts sooty gray; bill and feet black. The female is of a nearly dusky brown above and beneath; and has only a faint tinge of the golden yellow on the wings and tail.

MELLIFERA. A very extensive and interesting group of aculeated Hymenoptera, comprising the various species of Bees, which, from their peculiar construction and admirable economy, may be considered as the types of the order. These insects are characterized by having the basal joint of the posterior tarsi dilated into an oblong or subtriangular plate, which is hirsute on the inside, and provided with instruments for collecting and carrying pollen; the jaws are strong, and varied in the different species; the maxillæ and labium are elongated, and often transformed into a proboscis capable of being folded up many times beneath the head. The larvæ feed exclusively upon pollen or honey. Some of the species live in society, residing in dwellings of such regular construction, that the beauties of insect architecture may be said to rival the skill of the mechanic, while insect industry, order and good government may well command the admiration of mankind, and furnish them with lessons worthy of their imitation. It is not necessary, however, to do more in this place than to refer to the articles a various species of Bees, which will be f at considerable length, arranged acco to their respective alphabetical situatio

MELOE, OIL, or MAY-BEETLE genus of Coleopterous insects belonging *Cantharidæ;* "now confined," as Mr. W wood informs us, "to those apterous sp which have the body large and distor with the elytra short, oval, and lapping each other at the base of the suture. insects crawl slowly along upon the gr or amongst low herbage, upon which feed, especially relishing the wild bu cups (*Ranunculus bulbosus* and *R.*

MAY-BEETLE.—(MELOE PROSCARABÆUS

Mr. Jeffreys also found them very abun on *Arum maculatum*, near Cromlyn rows. When alarmed, they emit from joints of the legs an oily yellowish fl whence they have obtained the name o Beetles. In some parts of Spain they used instead of the blister-fly, or are r with it. They are also said by Latreil be employed by farriers; and Hoppe tel that they were, when he wrote (179 use as a specific against hydrophobia Germany; and the oil which is expr from these insects is used in Sweden the greatest success, in the cure of rhe tism, by bathing the affected part. (*Ins Insects*.) General Hardwick has als scribed a species of Meloe, found in all of Bengal, Bahar, and Oude, possessin the properties of the Spanish blistering From the medicinal properties of thes sects, Latreille has surmised in his inge memoirs upon the Buprestis of the anci that that noxious animal must have be Meloe. M. Biot, however, contends, on contrary, that the Meloe is not servic in medicine. The preparatory states of t insects have been the subject of much troversy. According to Goudart, Linn Frisch, and De Geer, the females burrow the earth, and there deposit a large mas yellow eggs, agglutinated together, w produce minute larvæ of a long narrow tened form, with thirteen jointed bodies short legs, and two long anal setæ. T are exceedingly active in their movem attaching themselves to flies, bees, &c., w It is said that they suck." Mr. Newpor lately proved the accuracy of these o ments in most particulars, and in his n rable memoir on the Natural History of Oil Beetle, in the twentieth volume of Transactions of the Linnæan Society, settled this hitherto much "vexed questi and traced the Meloe from the egg to perfect insect. [SEE OIL BEETLE.]

THIDÆ. A very extensive istributed group of Coleoptera; well-known and destructive *Melolontha vulgaris*) is the type. ATER.]

TTACUS. A sub-genus of the y, found in Australia, which

PSITTACUS UNDULATUS, or GRASS-PARRAKEET. We learn uld that this lovely little bird nt among the numerous mem- arrot family in Australia, both plumage and elegance of form:

LING GRASS PARRAKEET. PSITTACUS UNDULATUS.)

markable for its sprightly and nners. It is believed to be ge- rsed over the central parts of t so exclusively an inhabitant inland plains that it is rarely the mountain ranges and the breed in the hollow spouts of ucalypti, and may be seen in ay hundreds feeding upon the hat are found in abundance on The nature of their food and e heat of these plains compel ntly to seek the water; but be- o drink, they settle together in the neighbouring trees. Their rkably straight and rapid, and accompanied by a screeching ing the heat of the day when nless among the leaves of the ey so closely assimilate in colour ted with difficulty. The breed- at its height in December, and of the month the young are apable of providing for them- then assemble in vast flights, to their great migratory move- eggs are pure white, in number , and are deposited in the holes of the gum-trees without any are particularly interesting as for, independently of their mental appearance, they have a ted and pleasing song; besides are continually billing, cooing, each other; and their inward constantly heard from morning

g gain their full livery in about eight months, the sexes being precisely alike in the colouring and marking of their plumage. Forehead and crown straw yellow; the remainder of the head, ear-coverts, nape, upper part of the back, scapularies, and wing-coverts pale greenish yellow, each feather having a crescent-shaped mark of blackish brown near the extremity; wings brown; the outer webs of the feathers deep green, margined with greenish yellow: face and throat yellow, with a patch of rich blue on each cheek, below which are three circular spots of bluish black; rump, upper tail-coverts, and all the under surface bright green; two centre tail-feathers blue, the remainder green, crossed in the middle by an oblique band of yellow; irides straw white; nostrils bright blue or greenish blue and brown; legs pale bluish lead colour. In a state of nature they feed exclusively upon grass-seeds; but in confinement they thrive equally well on canary-seed.

MELYRIDÆ. A family of Coleopterous insects, having an oblong or ovate body, soft, and but slightly convex: the palpi are short, filiform, and pointed at the tip; the thorax rather convex; and the antennæ moderately long, serrated, nodose, or pectinated in the males of some of the species. These insects are generally of small size, and very gaily coloured, green and red being most conspicuous. They may be ordinarily found upon flowers, as they frequent them for the sake of the insects which they find there to feed on. Some of the species of the British genus *Malachius* have the anterior angles of the thorax and the base of the abdomen furnished with several red bladder-like appendages, which the insect is able to contract or dilate at will; it may therefore be provided for the purpose of increasing or decreasing its gravity during flight, or be used as a portion of an apparatus for emitting an offensive effluvium. The exotic genera are few, and exhibit no remarkable features.

MEMBRACIS: MEMBRACIDÆ. (Tree-hoppers.) A genus and family of Hemipterous insects, in many respects resembling the *Cicadidæ*, but they enjoy the faculty of leaping, which the Cicadas do not. This faculty does not, as in the grasshoppers and other leaping insects, result from an enlargement of their hindmost thighs, which do not differ much in thickness from the others; but is owing to the length of their hinder shanks, or to the bristles and spines with which these parts are clothed and tipped. These spines serve to fix the hind legs securely to the surface, and when the insect suddenly unbends its legs, its body is launched forward in the air. Some of them, when assisted by their wings, will leap to the distance of five or six feet, which is more than two hundred and fifty times their own length; in the same proportion, "a man of ordinary stature should be able at once to vault through the air to the distance of a quarter of a mile." Some of these "leaping harvest-flies" have the face nearly vertical, and the thorax very large, tapering to a point behind, covering the whole of the upper side of the body, and overtopping even the head,

which is not visible from above. In others the face slopes downwards towards the breast, the thorax is of moderate size, and does not extend much, if at all, beyond the base of the wing-covers, and does not conceal the head when viewed from above.

The habits of some of the "Tree-hoppers" are presumed to be much the same as those of the musical harvest-flies [See CICADIDÆ], for they are found on the limbs of trees, where they deposit their eggs, only during the adult state, and probably pass the early period of their existence in the ground. Others, however, are known to live and undergo all their changes on the stems of plants. Among the former is the American Two-spotted Tree-hopper, or *Membracis bimaculata* of Fabricius, which may be found in great abundance on the locust-tree (*Robinia pseudacacia*) during the months of September and October. These, as well as other tree-hoppers, show but little activity when undisturbed, remaining without motion for hours together on the limbs of the trees; but, on the approach of the fingers, they leap vigorously, and, spreading their wings at the same time, fly to another limb and settle there, in the same position as before. They never sit across the limbs, but always in the direction of their length, with the head or fore part of the body towards the extremity of the branches. On account of their peculiar form, which is that of a thick cone with a very oblique direction, their dark colour, and their fixed posture while perching, they would readily be mistaken for the thorns of the tree, a circumstance undoubtedly intended for their preservation. This insect measures about half an inch from the tip of the horn to the end of the body; the tip of is blackish above, with a long yellow spot on each side of the back; the female is ashcoloured, and without spots. While on the trees, these insects, though perfectly still, are not unemployed; but puncture the bark with their sharp and slender beaks, and imbibe the sap for nourishment. The female also appears to commit her eggs to the protection of the tree, being furnished with a piercer beneath the extremity of her body, with which to make suitable perforations in the branches. Another species, the White-lined Tree-hopper (*Membracis unicincta*), which may be found upon the oak-tree in the U. States during the month of July. It is about four-tenths of an inch in length; the thorax is brown, has a short obtuse horn extending obliquely upwards from its fore part, and there is a white line on the back, extending from the top of the horn to the hinder extremity. Tree-hoppers are often surrounded by ants, for the sake of their castings, and for the sap which oozes from the punctures made by the former, of which the ants are very fond.

MENOBRANCHUS. A genus of Reptiles belonging to the Salamander group, distinguished from the allied genera by its persistent branchiæ; the head having two rows of teeth in the upper and one row in the lower jaw. There are four toes to each foot, the toes being destitute of claws. There are at least two species of this genus found in North America.

MENURA. [See LYRE-BIRD.]

MEPHITIS. A genus of carnivorous animals, notorious for their disagreeable smell. [See SKUNK.]

MERGUS. A genus of Palmipede Birds; three species of which are found in this country.

The MERGANSER, or GOOSANDER. (*Mergus merganser.*) These birds are nearly allied to the Duck and Diver tribes. They are inhabitants of the arctic regions, breeding very far north in summer, and migrating southwards in winter; in severe seasons occasionally frequenting the lakes and rivers of Britain, but leaving this country early in the spring. Their food consists principally of fish, which they take by rapid diving; crustaceans, molluscs, and insects are also devoured by them; but they seem to be incapable of digesting vegetable matter of any kind. The male weighs about four pounds, and measures in length two feet three inches, and across the wings three feet two inches. The bill is three inches long, narrow, and finely serrated, the tip being armed with a hooked horny tip; both mandibles are black on the upper and under parts, and crimson on the sides; the head is large, and crowned with a great quantity of long loose feathers, which, when erected, form a crest; these feathers are of a glossy bottle-green; the cheeks and upper part of the neck are a dull black; the lower part, breast, belly, rump, and inner wing-coverts of a fine cream colour; the upper part of the back, and the lower scapulars, are black; the lower part of the back and the tail are ash-colour; the latter consisting of eighteen feathers. The legs and feet are very deep crimson colour. The flesh of this aquatic bird is accounted rank and fishy.

The RED-BREASTED MERGANSER, or GOOSANDER. (*Mergus serrator.*) This species measures one foot nine inches in length, and weighs about two pounds; the bill is long, hooked at the tip, and toothed at the edges; the upper mandible is dark brown, tinged with green, and edged with red; the lower one wholly red; the irides are a reddish red; the head, long pendent crest, and upper part of the neck, are of a glossy green, black, varying in different lights to a; the neck and belly white; the

RED-BREASTED MERGANSER
(MERGUS SERRATOR.)

d with black on the front, each side with five or six dged with black; the upper e glossy black; the lower, sides being marked with g lines of brown and gray; est to the wings are white; rts, some of the secondary scapulars, black and white: ills are black; some tipped others white on the upper o their points. The tail is brown; the legs and feet of olour. It is remarked, how- birds, both male and female, their plumage; some being and more distinctly marked hey are met with in great ndland, Hudson's Bay, &c.

MERGANSER. (*Mergus cu-* species is peculiar to Ame- ally found along the lakes rivers rather than near the p creeks, and visiting mill- perpetually for their food. reated, they are migratory, od, and places of resort of much alike. On the sea- es is very commonly called It is eighteen inches in feet in extent; bill black- , thickly toothed, and fur- projecting nail at the ex- ead is ornamented with a rest, which the bird has the or depressing at pleasure; f this, as far as the eye, is o the hind head white, and with black; it is composed

rows of feathers, radiating of the head; irides golden; neck black; part of the rts very pale ash, under der wing-coverts and secon- r alternate bars of black and long, black, and streaked e with white; the black on s handsomely round in two reast, which, with the whole e pure white; sides, under flanks, reddish brown, beau- tifully crossed with parallel lines of black; tail pointed; legs and feet, flesh-coloured; claws, large and stout. The female is rather less than the male; the crest is smaller; and the plumage in general is less decided and handsome in its markings. Her nest is composed of grass, lined with feathers from the breast; and she lays six white eggs.

MERIONES. A genus of Mammalia, belonging to the order *Rodentia*, distinguished from *Gerbillus*, to which they are closely allied, by their hind feet being much longer, the tail nearly naked, and the existence of a small tooth before the superior molars. There are two species found in

MERIONES LABRADORIUS.

North America; one is the *Meriones Canadensis*, well known to the inhabitants of Canada for its extreme agility. It closes itself up in its burrow, and passes the winter, like many of its congeners, in a state of lethargy. The *Meriones Labradorius*, figured by Sir John Richardson in his 'Fauna Boreali Americana,' is another interesting but closely allied species.

MERLIN. (*Falco æsalon.*) The smallest bird of the Falcon tribe, scarcely exceeding a Blackbird in size; but, though small, not inferior in courage to any of its more powerful congeners. It flies low, and with great

MERLIN.—(FALCO ÆSALON.)

celerity. Small birds are its natural prey; and in the palmy days of falconry it was used for taking quails and partridges, which it would strike on the head, breast, or neck, and kill with a single blow. The bill is of

MEROPIDÆ. The family of Insessorial birds, of which the Bee-eater (*Merops*) is the type. [See BEE-EATER.]

MERULIDÆ. The family of Perchers of which the Thrush (*Merula*) is the type. [See THRUSH.]

MILLEPEDE. [See ICLUS.]

MILLER'S THUMB. [See BULLHEAD.]

MILVUS; or KITE. A genus of *Falconidæ*, with long wings and generally forked tail; it contains the COMMON KITE [see KITE] and other species; of these Mr. Gould found a square-tailed species in Australia — the MILVUS ISURUS, or SQUARE-TAILED KITE. This true species of the Kite tribe inhabits South and West Australia; and may at one time be seen soaring high above the trees, and at others hunting over the open wastes in search of food.

MINNOW. (*Cyprinus phoxinus.*) This active and elegant little fish, the length of which seldom exceeds three inches, is commonly found, swimming in shoals, in some gravelly rivulets and trout-streams. The top of the head and back are of a dusky olive, mottled, and lighter on the sides; the belly white and silvery, with a tinge of yellow, and sometimes in summer of a bright rosy red colour; the scales very small; the lateral line straight and of a golden yellow; and the tail forked. It bites readily at a small

MINNOW.—(CYPRINUS PHOXINUS.)

red worm; and we know of no fish that

the head, lower part of the
tiaries; wings brown, margi
over the eye a stripe of buf
under surface pale buff; thr
series of dark brown spots
crescentic form; under surf
rufous; bill dark brown a
fleshy brown.

MITE. By this name sev
sects, of different species, are
have six legs, others eight;
furnished with two small cl
tremity, surrounded with h
semble the *Cheese Mite* in str
bits; others are parasitic, &c.

MITRA. A genus of Moll
a small and pretty turreted
and pointed at the end; colum
oblique thick plates. They
variety of patterns; some ar
grooved, some are angulated,
and they are variegated wit
hue. They abound in the

MITRA VULPECU

mates, the greater number
the Pacific Ocean, general
water, near coral reefs, bu
great depths. It has been a
animal is of a poisonous
wound, with its pointed tr
touch it; but this wants con
species are very numerous,
fossil.

MOA. The name by whi
a gigantic fossil bird, is kno

f America, and the West Indies. Its l colour is cinereous, paler beneath: ugh it cannot vie with most of the an birds in brilliancy of plumage, sweet and varied notes, no less than uliar faculty of imitation, render it ecial favourite, and a large price is tained for it. To use the words of

...—(MIMUS POLYGLOTTUS.)

, "He whistles for the dog; Cæsar p, wags his tail, and runs to meet his . He squeaks out like a hurt chicken; e hen hurries about, with hanging and bristled feathers, clucking to pro- r injured brood. The barking of the e mewing of the cat, the creaking of ing wheelbarrow, follow with great and rapidity. He repeats the tune him by his master, though of con- le length, fully and faithfully. He ver the quiverings of the canary, or r whistlings of the Virginia nightin- red-bird, with such superior execution ect, that the mortified songsters feel wn inferiority, and become altogether while he seems to triumph in their by redoubling his exertions." It its nest in fruit-trees, feeds on berries er fruits, and is easily tamed. The lays from four to five eggs, of an ash- lour, marked with patches of brown; ubates fourteen days, and is extremely of her nest, being very apt to desert ch disturbed.

observant author of the 'Birds of Ja- remarks, that at this time the old e watchful and courageous, and that ged intruder, though ever so uncon- f evil intent, or ever so large, is driven ith fearless pertinacity. But the hogs e creatures that give him the most ace. They are ordinarily fed upon rior oranges, the fruit being shaken o them in the evenings; hence they the habit of resorting to the orange o wait for a lucky windfall. The g-bird, says he, feeling nettled at the n, flies down and begins to peck the h all his might:—Piggy, not under- g the matter, but pleased with the ss, gently lies down and turns up his ide to enjoy it; the poor bird gets agony of distress, pecks and pecks but only increases *the enjoyment of* the luxurious intruder, and is at last compelled to give up the effort in despair.

MOLE. (*Talpa Europæa.*) A quadruped of the genus *Talpa*, whose structure admirably fits it for a subterranean life. It is from five to six inches in length: the body is thick and cylindrical; the head is much prolonged, especially the muzzle, which projects far beyond the jaws, and is very flexible, strong, and tendinous, serving to convey food to the mouth: it has no external ears, but the auricular apparatus is highly developed, and the sense is very acute: its eyes are so very minute, and concealed by its fur, that it is a vulgar opinion that it is deficient in these important organs. The

MOLE.—(TALPA EUROPÆA.)

head is not distinguished from the body by any appearance of neck; the legs are so short as scarcely to project perceptibly from the body; the fore feet, situated obliquely outwards, are excessively strong and broad, and furnished with very large and stout claws, so as to give the animal the power of working under the surface with the utmost rapidity; the hind feet are small in proportion to the fore feet; and are calculated for throwing back with ease the mould from behind, during the animal's subterranean labours. The rapidity with which the Mole can make its way through a favourable soil would be quite astonishing, did not its whole conformation and great muscular strength account for it. The tail is short and small: the skin is much thicker and tougher in proportion than in other quadrupeds, and the fur with which it is covered is close set and soft as the finest velvet. The food of the Mole consists chiefly of earthworms and the larvæ of insects; but it is not confined to these; for during the summer months it not unfrequently leaves its subterranean retreat, and wanders upon the surface in quest of prey, such as birds, mice, frogs, snails, &c.; and during these nocturnal excursions, it often meets with a vigilant and successful enemy in the owl. Moles are extremely voracious. We are told, that if two are shut up together without food, the strongest will devour the weakest, even to the bones: nothing but the skin is left, which they never eat, and which, when one has killed the other, is always seen to be ripped up along the belly. They are incapable of long fasting; if kept ten or twelve hours without food, it is said they die of starvation.

"The farmer views the operations of the Mole as destructive to his crops by exposing and destroying their roots, or by overthrowing the plants in the construction of the *mole-hills*; his burrows, moreover, become the haunts and hiding-places of the field-

of the ground, and occasion great injury to the roots of grass, corn, and many other plants. The soundest practical conclusion lies probably in the mean of these opinions; and the enlightened agriculturist, while he takes prompt measures to prevent the undue increase of the Mole, would do well to reflect on the disadvantages which might follow its total extermination."—*Brande's Dict. of Science.*

From a mass of interesting information relative to the habits of this animal, in Mr. Bell's History of British Quadrupeds, we select the following:—"Every one is aware of the fact that the Mole burrows for its food, that its nest is formed under ground, that a larger hillock than the rest is raised for the reception of its young; but it is not so generally known that its subterranean excavations are of the most distinct and determinate character; that there are permanent passages or high roads for its ordinary travels from one part of its domain to another; that into these roads open the excavations in which it follows its daily labour in search of food; that its fortress—the house in which it resides from the autumn to the spring—is of a complex and most ingenious structure, and that this domicile is always a distinct and even remote building from that in which the nest is formed." After stating that we are principally indebted to the researches of Henri le Court, a French gentleman who devoted many years to the study of the habits, &c. of the Mole, he thus proceeds: "The district or domain to which an individual Mole confines himself may be termed its encampment. Within its limits, or at least in immediate communication with the district, all the labours of the animal are pursued. It consists of the habitation or fortress, from which extends the high road by which the animal reaches the opposite extremity of the encampment, each taking an Irregular se
and opening into the high ro
tances from the fortress. Su
description of this most sin
and nothing surely can be
admirably calculated to en
or the retreat of the inhab
an arrangement of interna
munication as this. The ci
nicating beneath directly
and above with the upper
with the lower by five pe
latter again with the road
nine,—exhibit altogether a
architecture, which may riv
lebrated erections of the
nest is always distinct, and
mote from the fortress, and
not always, covered by a
when it exists, is much larg
nary mole-hill. It is for
excavating and enlarging
tersection of three or four
bed of the nest is compos
herbage, grass, roots, or leav
was examined by Geoffrey
no less than two hundred an
young wheat were counted.
can scarcely be considered
occurrence, as they gener
and soft substances. The
tion is supposed to be about
upwards: and the young a
in April,—sometimes earlie
according to the season:
Moles have been found at al
beginning of April till Au
led some persons to believe
more than one brood in t
are generally four or five, s
as three, rarely six."

"That Moles were inten
ficial to mankind," obse
"there can, I think, be no

e Earl of Essex, in Herefordshire, the is it never thrive."

he Rev. C. A. Bury, who has published e very White-of-Selborne-like notes on "Mammalia of the Isle of Wight," in pages of "The Zoologist," observes that s some lands the drainage is effected lly or in part by the Moles. So far, m (he says) I think the farmer might are the Moles to his own advantage, and ve some shillings, perhaps pounds, to the ole-catcher. Man is too fond of meddling, nd often blunders to his own cost. In his attempts at improvement, he only disturbs the balance of creation. Granted that occasionally some species of animal, favoured by peculiar circumstances, either the scarcity of its appropriated check (occasioned, perhaps, by the meddling hand of man), or a superabundance of its natural food, may increase beyond due bounds, and so require the interposition of human force or skill, let that force and skill be then exerted; but I believe that this would be seldom necessary; things would right themselves. They have been generally found to do so, unless man has marred his meddling propensities to the extent of utterly extirpating the appointed check; for it seems to be a law of creation, that where there is food, there will be provided that which feeds on it, and that in just proportion. The Mole is evidently an appointed check to the undue increase of the earth-worm; it not only devours numbers itself, but by its burrowing drives to the surface many more, which, in their attempt to escape the Mole, fall a prey to the rook and the thrush. The earthworm, unquestionably, has its uses, in drawing vegetable substances beneath the surface, and so the gases that are released in the process of decomposition, and which would otherwise be lost, are preserved for the nutriment of the growing plant, while the portion deposited by the worm is again thrown to the surface by the form best adapted for the nutriment of the plant above ground. But worms devour the roots of plants; and were there no checks to their increase, vegetation would be seriously injured, instead of benefited in preventing a too crowded herbage. Thus, then, all is well arranged by Divine Wisdom; but if man steps in, disturbs the mole, and shoots or snares the bird, he must, if he carry his interference far, produce a disturbance among God's works, to his own detriment."

MOLE CRICKET. (*Gryllotalpa vulgaris.*) Of all the British Orthopterous insects, the Mole Cricket is by far the most curious. It derives its name from the peculiar formation of its anterior extremities, and its resemblance in its habits to those of the Mole. It is about two inches long, and of a broad shape. In making its burrows, it cuts through, or detaches all the roots of plants that lie in its way. It is readily distinguished by the extraordinary structure of its fore legs, which are excessively strong, and furnished with very broad feet divided into several sharp, claw-shaped segments. The Mole Cricket emerges from its subterraneous retreats only by night, when it creeps about the surface and occasionally

MOLE CRICKET.
(GRYLLOTALPA VULGARIS.)

employs its wings in flight: it is at that time also that it exercises its chirping call. It lives entirely on vegetables, devouring the young roots of grasses, corn, and various esculent plants, and commits great devastation in gardens.

When the female is fecundated, she forms a cell of clammy earth, in which she deposits about a hundred and fifty eggs: this nest, which is about the size of a common hen's egg, is carefully closed up on every side, as well to defend its contents from the injuries of the weather, as from the attacks of carnivorous beetles; which, being themselves underground inhabitants, would certainly, but for this precaution, either devour or destroy them. Nothing, indeed, can exceed the care and assiduity of the Mole Cricket in the preservation of its young. Wherever a nest is situated, fortifications, avenues, and entrenchments surround it; there are also numerous winding by-ways which lead to it; and a ditch encompasses the whole, which few insects are capable of passing. But the diligence of these little animals does not end here: at the approach of winter they move their nests entirely away, and sink them deeper in the ground; so that the influence of the frost cannot retard the young brood in their progress to maturity. When the weather grows milder, they raise their habitations, &c. in proportion; till at last they are brought as near the surface as possible, without being wholly exposed to view, in order to receive the genial influence of the sun; but should the frost unexpectedly return, they again sink them to their former depth.

MOLLUSCA, or MOLLUSCS. The term applied to that large division or class of animals which inhabit and form shells. Their bodies are soft, and destitute of an articulated skeleton or vertebral column: and instead of the nervous system being developed in the form of a spinal chord, it is simply dispersed more or less irregularly in different parts of the body. Some species are terrestrial, and breathe air; but the greater part live entirely in the water, from which they derive their nutriment, and in which they breathe by the aid of branchiæ, or certain gill-like appendages. Thos

and position as in the vertebrate animals; and a greater aberration is observable in the position of the heart and organs of respiration, as well as in the structure of the latter. The body of the Mollusca is almost entirely occupied by the organs of nutrition; and the organs of sensation and locomotion are entirely subservient to the supply of these.

The motions of Molluscous animals consist of different contractions, varying in their direction, producing inflections and prolongations, together with relaxations of their several parts, by means of which they creep, swim, and seize upon such objects as the formation of these parts are adapted to: they are, however, incapable of rapid progress, their limbs not being supported by articulated and solid levers. The name they have received designates them as *soft* animals; and this they are pre-eminently. Almost all of them have a peculiar development of the skin, which covers their body like a *mantle*, and has received that appellation. This process, however, is sometimes narrowed in a simple disc, or is tubiform, or is hollowed into a sac, and in some cases it is divided and extended in the shape of fins.

There are two distinct kinds of molluscous animals, namely, *cephalous*, or such as are provided with a head; and *acephalous*, or headless. Those which have heads are usually provided with *tentacula*, by which they feel their way, and which they have the power of easily retracing when in danger: some have also the organs of sight and hearing; whilst others, destitute of these, only enjoy the sense of touch. This they possess in the organ of motion, to which the name of *foot* has been given, and which is a member of considerable importance. Many move along the surface of the ground or bottom of the sea, by means of their foot, which they thrust forward and fix to some solid object,

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MOLOCH. A singular gen

of any that I know, the horns of the head and the numerous spines on the body giving it a most formidable aspect. The scales of the back are small and unequal; they gra-

MOLOCH LIZARD.—(MOLOCH HORRIDUS.)

dually increase in size as they approach the base of the conical spines, which is surrounded with a ring of larger scales with longer spines. The large spines are conical, rather compressed, spinulose below, smooth and acute at the tip, and are usually furnished with a sharp-toothed ridge on the front edge, and sometimes on both. These spines only consist of a horny sheath, placed on a fleshy process of the exact form and appearance of the spines they bear. The scales of the under side of the body are of the same form as those of the back, and are furnished with similar but smaller and less produced spines. The back of the neck of the two specimens I have seen is furnished with a large rounded protuberance like a cherry, covered with large granular spinous scales, and armed on each side with a large conical spine; but I do not know if this is common to the species, or merely accidental in these individuals; at any rate it adds considerably to the singularity of their appearance. I have named this genus, from its appearance, after *Moloch*, "horrid king."

MONAD. The name given to the smallest creature that exists among the Infusorial Animalcules; a mere atom or point, so small indeed as sometimes almost to elude microscopical examination; yet we are told by those who have devoted great attention to this branch of Natural History, that indescribably minute as these Monads are, they present a distinct organization, and are capable of locomotion; and have, moreover, senses sufficient for their guidance.

MONITOR. A name given to certain large Saurian reptiles, belonging to the Lizard tribe. They have teeth in *both jaws, but none on the palate, and the greater number* have the tail laterally compressed, as more adapted to their aquatic habits. They are divided into two distinct groups; (the first, or Nilotic Monitors, are known by their numerous small scales upon the head and limbs, the belly, and around the tail, which latter has a keel above, composed of a double range of projecting scales. The other group of Monitors has angular plates upon the

MONITOR OF THE NILE.
(MONITOR NILOTICUS.)

head, and great rectangular scales upon the belly and around the tail. The skin of their throat is invested with small scales, and forms two transverse folds. The Monitors frequent the haunts of Crocodiles and Alligators, and are said to receive the name from their giving warning, by a whistling sound, of the approach of those dangerous reptiles.

MONKEY. (*Simiadæ.*) Under the word APE will be found a general as well as a particular description of the higher *Quadrumana*. Then come the BABOONS, which the reader will find similarly arranged in alphabetical order. To them succeed the MONKEYS, which, for the most part, are distinguished by their having cheek-pouches for the temporary reception of their food, a long muscular tail, and callosities on each side of it. The species are very numerous; many inhabit India and the Malay Archipelago; but Africa may be regarded as the head-quarters of the Monkey tribe; for there they literally swarm. A great variety of species are spread over the face of the country; each species being said to be restricted to a certain extent of territory, and violently resisting any intrusion upon it. The Monkeys being the smallest of the quadrumana, are endued with less power for doing mischief than the Ape and Baboon: their ferocity, indeed, appears to diminish with their size; and, when taken wild in the woods, they are tamed with more facility, as well as sooner taught to imitate human actions, than the larger kinds. Most of the species are gregarious, associating in large troops; but each troop is invariably formed of the same species.

It has been well observed that the Monkey tribes are in reality the masters of the forests: for their dominion is not disputed either by the tiger or the lion, since they easily escape them by their nimbleness, and live on the tops of trees beyond their reach. The only animals they have to dread are serpents, who make perpetual war on them. Some of these serpents are of prodigious size, and swallow a Monkey with as much ease as it can swallow a bird. Others are smaller, but more agile, and go in quest of Monkeys

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along the branches of trees; and, the more effectually to secure their prey, watch the time when they are asleep. Thus creatures that are the objects of our terror, prey upon others that are objects of our disgust.

Monkeys subsist principally on fruits, the buds of trees, or succulent roots and plants. They are all fond of sweets, and show a particular predilection for the pleasant juice of the palm-tree and the sugar-cane; but when it happens that these fail, or that a different kind of food becomes more agreeable, they have recourse to insects and worms; and sometimes such as inhabit the coasts descend to the sea-shores, where they feast on oysters, crabs, &c. The crafty and ingenious manner in which they obtain these is thus effected. The oysters of the tropical climates being larger than ours, the Monkeys, when they reach the sea-side, pick up stones, and thrust them between the opening shells, which being thus prevented from closing, the cunning animals then eat the fish at their ease. In order to attract the crabs, they put their tails to the holes in which they have taken refuge; and when the crabs have fastened on the lure, the Monkeys suddenly withdraw their tails, and thus drag their prey on shore. The females generally bring forth one at a time, and sometimes two. They but rarely breed when brought to Europe; but such as do, exhibit great parental affection. Both the male and female seem indefatigable in nurturing, fondling, and caressing their young; nor do they instruct it with less assiduity; often severely correcting it, if stubborn or disinclined to profit by their example. We all know that these animals, when domesticated, are highly amusing; and there are few persons who have not laughed at their droll mimicries and capricious feats of activity. But it is generally when in company with other animals of a more simple nature, whom they appear to delight in tormenting, that their tricks and superior instincts are most effectively displayed.

We shall now give a few specimens, beginning with Monkeys that belong to the Old Continent.

The Spotted or Diana Monkey. (*Cercopithecus Diana.*) This species has a long white beard; the upper parts of the body

Diana Monkey.—(Cercopithecus Diana.)

are of a reddish colour, marked with white specks; the belly and chin are whitish; it has a crescent of white hair on the brow; and the tail, which is very long, is of the same colour as the body. It is a native of Congo and Guinea; and is one of the most lively and playful of the whole tribe.

The Green Monkey. (*Cercopithecus Sabæus.*) The prevailing colour of this species is a fine olive, a little varied with gray. The under parts of the animal and the insides of the limbs are of a light silvery gray. The face is of a swarthy flesh-colour; the nose black; the cheeks furnished with thick and long pale-yellow hair, falling back on each side the face, and almost covering the ears. It is a native of several parts of Africa.

The Moustache Monkey. (*Cercopithecus cephus.*) On the cheeks of this Monkey there are two large tufts of yellow hair, from which it derives its name. It is about a foot in length, and the tail a foot and a half. The face is bare, and of a bluish-black; the nose blunt, with a dilated, transverse white patch immediately below it; the edges of both lips and the space round the eyes black; the ears are round, and tufted with whitish hair; the hair on the head is yellow mixed with black; that on the body and limbs is a mixture of red and ash-colour; the under part of the body is somewhat paler than the upper; and the feet are black. It is a native of Western Africa.

The Patas, or Red Monkey. (*Cercopithecus ruber.*) The upper parts of this animal are of a vividly bright bay colour, so as almost to appear red; but the under parts and insides of the limbs are ash-coloured; the cheeks are bearded, as is also the chin, with whitish hairs, and across the forehead runs a black band. The body is about eighteen inches long; the tail somewhat shorter. It is a native of Senegal.

The Proboscis Monkey. (*Nasalis larvatus.*) This is the most grotesque in appearance of all the different species; the nose being of such a length and form, as to present to the mind no other idea than that of caricature. It is a large species, measuring two feet from the tip of the nose to the tail, which is more than two feet long. The face is of a brown colour, marked with blue and red; the ears broad, thin, naked, and hid within the hair. The head is large, and covered with chestnut-coloured hair; the whole body is also of a similar colour, except that on the breast it approaches to orange. It is chiefly found in Cochin-China and Borneo; and is sometimes seen in large troops. It feeds only on fruits.

The Full-bottom or Kend Monkey. (*Colobus polycomus.*) This species is distinguished by its head and shoulders being covered with long, coarse, flowing hair, like a full-bottomed periwig, and of a dirty yellow colour mixed with black. Its body, arms, and legs are of a glossy black; hands naked, and furnished with no more than four fingers; on each foot five very long toes. The tail is very long, and of a snowy whiteness, with very long hair at the end,

: body and legs very slender; h of the former is about three ative of Sierra Leone.

CHINA MONKEY, or DOUC, is species, distinguished by the ty and brilliancy of its colours. ather flat, and of a yellowish nd across the forehead runs a band: the sides of the face y long yellowish hairs; round collar of purplish-brown; the the arms and thighs are black; and knees are of a chestnut- back, belly, and sides are of a ; the lower part of the arms hite; the feet black; and the American Monkeys) is covered In an upright position this ures three and a half or four , being nearly as large as the

ys that follow belong to the tinent, all of which differ from and Africa by having neither , posterior callosities, nor op- bs, and being generally fur- rehensile tails; while the nos- ated by a broad space in front: e the family CEBIDÆ.

ER MONKEY. (*Mycetes Beelze-* imal is about the size of a fox; ck, glossy hair; a round beard in and throat; black shining ound ears; and a long tail. of Brazil and Guiana, inhabit- in great numbers, which re- dreadful howlings. It receives n the following circumstance, ity of which is abundantly fferent writers. It is common se creatures to ascend a lofty umbers of them assemble on ches: the Monkey who is ele- e rest then sets up a howl, so ll that it may be heard at an ance: after a certain space he s a signal with his hand, when embly join in chorus; but on a sudden silence prevails, and cludes his harangue. The cla- occasions is most astounding ble. This howling faculty is by the peculiar conformation fes, or throat bone, which, com- ith the larynx, gives great ad- ance to the voice. These howl- ly sent forth in the morning, in the darkness of night; they d when the over-clouded sky approaching storm. [See MY-

AILED MONKEY. *Pithecia leu-* his animal, which is about the eat, has a very singular aspect; the face being black, bare, and y white downy hair on the rehead, and which, gradually the top and sides of the head, thick and full kind of beard, under the chin, so as to leave a bare space there. Its general colour is a dusky brown: the eyes are large, and the ears round and flat: the feet and hands are furnished with sharpish claws; and the tail is long and very full of hair. It is a native of South America.

The FOUR-FINGERED, or SPIDER MONKEY. (*Ateles paniscus.*) A species of Monkey, distinguished no less by its active, lively, and tractable disposition, than by the slenderness of its body and limbs, and the absence of thumbs on its fore-paws. Its colour is uniformly black, except on the face, which is of a dark flesh-colour; and it has a long prehensile tail, which more than compensates for the defects of the hand. It inhabits the woods of South America, associating in great multitudes, and assailing such travellers as pass through their haunts by throwing dry and withered sticks at them, and by numberless sportive and mischievous gambols. In order to pass from one lofty tree to another, whose branches are too distant for a leap, they form a kind of chain, by hanging down, linked to each other by their tails; and swinging in that manner till the lowermost catches hold of a bough of the next tree, and draws up the rest.

The SQUIRREL MONKEY. (*Callithrix sciureus.*) This species, which scarcely exceeds in size the animal whose name it bears, is of a bright golden yellow colour, with orange-yellow feet and hands: the nails of the hands are flat, and those of the feet resemble claws. The head is round; the nose blackish; the orbits of the eyes flesh-colour; and the ears hairy: under parts whitish: tail very long, with a black tip. The specimens usually brought to Europe are rather of a yellowish brown or greenish cast.

MONODON. [See NARWHAL.

MONODONTA. A genus of Mollusca, inhabiting a pyramidal shell; the lips disunited at the upper part, the left having a tooth-like process, from which the name is derived; and it is on account of this tooth

MONODONTA PHARAONIS.

or notch, with which the columella terminates, that the genus is divided from *Trochus*. The animal is characterized as—head distinct, having two tentacula, with eyes at the base; foot short. They are found in most seas, and recent species are rather numerous.

MONOMYARIA. The name of an order of *Conchifera*, consisting of those bivalve shells which have but one principal muscular impression in each valve, and which includes several well-known useful Mollusca;

as the Oyster, Mussel, and Pearl Oyster. Many of the genera arranged under this order attach themselves to rocks, &c.

MONOPTERUS. A genus of Malacopterygious fishes; characterized by their having the gill-openings united, but with a partition; and the dorsal and anal apparent only from the middle of the tail backwards. The known species is from the Moluccas; it is green above and fawn-coloured below.

MOOR-HEN. [See GALLINULE.]

MOOSE-DEER. [See ELK.]

MORDELLIDÆ. A family of Coleopterous insects, distinguished by the peculiar structure of their body, and their extreme activity both in flying and leaping. The body is elevated and arched, with the head inserted very low; the thorax is trapezoid or semicircular; the elytra either very short or acuminated at the extremity, as well as the abdomen: the antennæ rather short.

LUNATED POINT-TAIL BEETLE.
(MORDELLA LUNATA.)

The smaller typical species frequent flowers, especially those of the white-thorn and *umbelliferæ*. Some of the species are parasitic upon other insects. *Ripiphorus paradoxus*, for instance, inhabits in the perfect state the nests of the common wasp; "whence Latreille observes, that it has been inferred that it subsists in that situation in the larva state, and is probably nourished by the wasps as their own offspring. On arriving at the perfect state, it emerges from the nest, and seeks the flowers; and it is probable that the female deposits her eggs in the already formed cells of the wasps, her abdomen being well adapted for such purposes, being long and acuminated."—*Westwood*.

MORMOLYCE. A singular genus of Coleopterous insects found in Java, one species of which has been described by M. Hagenbach: our figure gives a very good idea of its form, which is remarkable for its extreme flatness, the elongation of the head, and the very great leaf-like dilatation of the elytra: it was first found by Kuhl and Van Hasselt. The larva has only lately been described and figured. M. Van Ovendyk found the larva and pupa in the *Polyporus fomentarius*, or an allied species of fungus growing on the trunks and roots of trees: the larva closely resembles that of *Carabus* and *Calosoma*. Naturalists generally place this curious Carabidous insect near the South American genus *Agra*.

JAVANESE MORMOLYCE.
(MORMOLYCE PHYLLODES.)

MORMYRUS. A genus of Malacopterygious fishes, nearly allied to the *Esocidæ* or Pike family. The body is compressed, oblong, and scaly; tail thin at the base, but swelling near the fin; skin of the head naked, covering the operculum and gill-rays, and leaving no opening for the latter but a vertical fissure. The gape is small, the angles being formed by the maxillaries: the teeth are small, notched at the extremities, and occupy the intermaxillaries and

SHARP-NOSED MILK MORMYRUS
(MORMYRUS OXYRHYNCHUS.)

lower jaw; and there are bands of small crowded ones on the vomer and tongue. The stomach is a roundish sac, followed by a slender intestine with two cæca, almost always covered with fat: and the air-bladder is long, large, and simple. Two species have a cylindrical muzzle,—the one having a long dorsal fin, and the other a short one; a third has both the snout and dorsal short; and in a fourth, the forehead forms a protuberance advancing in front of the mouth. The species here figured is the sharp-nosed Mormyrus (*M. oxyrhynchus*), which is regarded as one of the best fishes found in the river Nile.

MORSE. [See WALRUS.]

MOSCHIDÆ. A family of ruminant quadrupeds familiarly known as Musk Deer (which see).

MOSCHUS. A genus of Ruminants allied to the antelopes, most of them being delicately graceful in form. They are found in Western Africa, in India, and the Indian Islands. The accompanying figure of the Moschus Kanchil will give a good idea o

MOSCHUS RANCHIL

the form of this genus, some of which we have seen alive in the gardens of the Zoological Society. They are very delicate animals. [See MUSK.]

MOSQUITO. (*Culex.*) A gnat-like insect common in America and the West India islands, whose stinging qualities are most annoying. These insects, of which there are many species, are furnished with a proboscis for piercing the flesh, and at the same time forming a kind of siphon through which the blood flows; but that which renders the Mosquito so dangerous as well as troublesome is, that the proboscis not only makes a wound, but injects into it a poison which causes inflammation. Mr. Edwards, in his 'Voyage up the Amazon,' has the following notice of these troublesome pests: "Soon

MOSQUITO. — (GULEX MOSQUITO.)

after dark we crossed the mouth of the Xingu (Shingu), much to the displeasure of the Indians, who wished to stop upon the lower side. And they were very right; for scarcely had we crossed, when we were beset by such swarms of carapanãs, or mosquitoes, as put all sheep at defiance. Nets were of no avail, even if the oppressive heat would have allowed them, for those which could not creep through the meshes would in some other way find entrance, in spite of every precaution. Thick breeches they laughed at, and the cabin seemed the interior of a bee-hive. This would not do; so we tried the deck; but fresh swarms continually poured over it, and all night long we were foaming with vexation and rage."

MOTACILLA. [See WAGTAIL.]

MOTH. (*Phalæna* of Linnæus.) The name of Moths is given to a numerous and beautiful divison of Lepidopterous insects, readily distinguished from Butterflies by their antennæ tapering to a point, instead of being terminated by a knob, and by their being seldom seen on the wing except in the evening or night. It should also be observed that the antennæ are often feathery, or comb-shaped; and that the legs have two spiny processes or thorn-like points at the middle joints of each.

The diurnal Lepidoptera are all provided with a tongue for gathering their food; but a great proportion of the Moths are destitute of that organ, whilst in others it is exceedingly small: a considerable number of them, therefore, must pass the whole of their winged state without food. The larvæ or caterpillars from which the various Moths are produced, exhibit nearly the same variety of appearance as the winged insects which spring from them. Some are large, while others are extremely minute; many are provided with ten, others twelve or fourteen feet, and the largest have sixteen. Some of the caterpillars are smooth, others are covered with hairs; but all of them, after having several times cast their skin, spin for themselves the materials of a habitation, in which they are to be transformed into chrysalids.

All the nocturnal Lepidoptera were included in the genus *Phalæna* by Linnæus; but since the time of that great naturalist they have been divided by Cuvier, Latreille, and others, into a number of different groups, the classification of which is too complicated and embarrassing to be thoroughly explained in this work. A few of the species are here appended as examples of the group. We may remark that there are several thousand species of Moths, varying in size from a line in breadth to eleven inches, and even more. The variety of form and colour is endless. We limit ourselves to the notice of two or three species which are *notorious* for their depredations; readers who wish to see how useful some members of the group are to mankind, must consult the articles SILKWORM MOTH and SATURNIA, though there is not a Moth that is not more or less useful in many ways, to Birds and Bats, if not to us. Referring to the article SPHINGIDÆ for an account of the HAWK-MOTHS, and to the article HEPIALUS for a short description of another important subdivision; to the word COSSUS for the GOAT-MOTH; and to other words scattered over the work, — we begin with noticing the BOMBYCIDÆ, which contains the largest of all the Moths yet known, — the *Saturnia Atlas*, — the extent of whose wings measures between eight and nine inches. The ground colour is a fine deep orange-brown, and in the middle of each wing is a large sub-triangular transparent spot: each of these transparent parts is succeeded by a black border: and across all the wings run lighter and darker bars, exhibiting a very fine assortment of varying shades: the upper wings are slightly curved downwards at their tips, and the lower wings are edged with a border of black spots on a

with fringes of the same colour, or sometimes brownish. The female is distinguished by a proportionally thick, long abdomen, which is whitish gray, and woolly at its exterior; and by small, slender, brownish gray wings, which are not adapted for flying. The caterpillar is found in April and May, living on rye-grass (*Lolium perenne*), and many other plants in meadows: its ground colour is velvety black, yellow at the incisions and sides, with a black head and small reddish yellow warts, having ash-gray hairs on them. The cocoon consists of only a few threads; the pupa is yellow, streaked with black lengthways, blackish brown on the wing-covers, and beset with whitish gray tufts of hair. After pairing, the female lays her eggs at the end of May and beginning of June, round the stems of the grass, and covers them with the down from her abdomen, to secure them from the weather. Two generations appear in long, warm summers; but in general the caterpillar passes the winter at the roots of the grass. The destruction of this caterpillar when in great abundance is very difficult, as it prefers living in long grass in the day time, or in the ground. Breaking up the meadows in autumn appears to be the best method of destroying the pupæ concealed there; they will thus be exposed to the enemies appointed by Nature herself, such as *Ichneumonidæ*, &c.

The Brown Tail Moth (*Porthesia auriflua*) is remarkable for the ravages which its caterpillar commits by destroying the foliage of trees and hedges. The Moth is of a fine satiny white, except the hinder part of the body, which is of a deep brown. The caterpillar is brown and hairy, having a row of white spots along each side, and two red spots on the lower part of the back. It is of a gregarious nature, vast numbers residing under one common web: they are hatched early in autumn, and immediately form for

the inspection of the parochi
it is asserted, that in one da
of Clapham alone, eighty bu
collected and destroyed.

The larvæ of Psyche a
genera of Moths inhabit a
by themselves. In some
New Holland and South Af
are often beautifully or
straws, spines, or little bits
an example of this kind that
Alexander describes, in his
Western Africa,' under th
Lictor. "That strange insec
bundle of sticks, occurs her
and, with its caterpillar-like
are stuck the ends of little s
aft like the quills of a porcu
seen walking along by pro
and six legs from its case.
Insects the sticks are irregu
being near the tail. In oth
are three sets of regular fasc
a 'diarthrodial articulation
the ingenuity of this insect t
able. All the fascæ are
length; but the set about the
the middle are less so; and
taper nearly to a point.
found suspended to dried rh
A third species, more delicate
two, feeds on yellow ever
and has one set of regular
body."

Of the family Noctuidæ,
the Cabbage Moth. (*M
sicæ.*) This Moth is about
half broad, when the wings
its head, collar, and back, a
intermixed with whitish and
The back has a thick double
domen is dark ash gray, the
in the middle with black t

ine. Above, it is sometimes fur-
dark or pale spots placed length-
he sides is a dirty yellow stripe,
mes reddish above; and close
pot are two white spiracles, sur-
h black, each in a small black
n this caterpillar appears in great
t does considerable damage to
etables, such as cabbages, lettuces,
ng out the heart. It appears in
st, and September. To look for
m, although troublesome, is the
ay of getting rid of them.

LER, or GRASS MOTH (*Cerapteryx*
another species injurious to mea-
Moth is of a moderate size; its
back are yellowish brown, the
et yellow; the brown antennæ
l with yellow scales; and the
d the legs are brownish gray, the
darker joints. The upper wings
brownish gray, with a darker
the middle. The ordinary middle
whitish, yellowish, or bluish; the
the second half-moon shaped.
narrow line runs from the root
through the middle of the wings
lf-moon spot, which it intersects
manner as to give it the appear-
ree-pronged fork, or horn, whence
n English name of the Moth.
border of the wings is lighter;
brownish yellow. The under
yellowish gray, nearly black to-
outer border, with yellowish
flies in the latter end of July
ing of August.—The caterpillar
blackish, with five lighter stripes
back; the first and last sections
with a hard, smooth scale. The
at the edge of the anus: the
blackish: the hind feet project
anal point. The larvæ are an

The GAMMA MOTH. (*Plusia gamma.*) The ground colour of this beautiful Moth is light and dark gray mixed with rust colour. The head and collar are of a brownish hue, edged with light gray lines, as well as the crested back and shoulders: the abdomen is yellowish gray, with elevated brown tufts of hair. The upper wings are marbled, and have a metallic lustre: the inner edge is wavy, and toothed near the fringes: the notched cross-lines are silvery: towards the inner border is situated a silvery or gold-coloured shining mark, which resembles the Greek letter Gamma (γ). The under wings are yellowish brown at the base above the fringes, with black bands. The blackish-brown pupa is enclosed in a white cocoon.—The caterpillar is green, beset with single hairs, having only twelve feet, and a brownish green head. On the back are four very small yellowish or whitish lines: the feet have a yellow stripe: the spiracles are blackish green. These caterpillars are found from spring to autumn in a variety of generations, and are so plentiful in some years, that they do great damage to vegetables, peas, and various sorts of fodder-herbage. The only possible means of destroying them is by shaking them off and hand-picking.

The RED UNDERWING. (*Catocala.*) The antennæ of this handsome Moth resemble threads: the thorax is crested, and of a brownish-gray colour, as is the abdomen and superior wings; the latter having double lines and zig-zag bars crossing them in several places, and a remarkable spot in the middle. The under wings are of a fine scarlet colour, having two broad bands of black; the tongue is spiral; and all the wings are dentated. The caterpillar is about two inches and a half in length; feeds on the willow; and is in colour so like the bark, as not to be easily seen. About the latter end of June it changes to a red chrysalis:

apiarians. *Male:* Antennæ, head, and back clay-yellow; on the back behind the scutellum rises a small blackish-brown tuft of hair, the point of which is white; abdomen yellowish brown. The upper wings are broad, short, and obtuse; the fore border slightly curved, the fringe border lunated, notched inwardly, the inner border rather waving, with a small hollow exactly opposite the corner of the inner angle. The colour is dusty ash gray. From the base to the middle there is a white slender band, on which are scattered single dark brown minute spots. Upon the fore-border, and along the fringe-border, are lines in the same direction, proceeding from a spotted band, which is angularly bent, and faint. The inner border is light yellowish for a considerable breadth, from the base to the inner angle, with many purplish-brown, short, elevated, wool-like lines in the same direction; so that when the wings are closed above, an apparently furrowed surface will be formed. The fringes are jagged, brown and white at the points, and surrounded inwardly with a darker hair-like line. The under wings are light ash gray, and sometimes brownish gray, with lighter fringes edged with white, and a yellowish line for their inner boundary. The female is not only much larger than the male, but distinguished from him by a darker rusty brown head and back. The abdomen is thick and club-shaped, furnished with a brownish gray ovipositor, and the feet of the same colour. The upper wings are darker, obtuse, straight, almost rectangular, and a trace of the faint spotted band is rarely perceptible. The under wings are much lighter, white, but with a dark gray dusty border, and darker veins of the same colour, as far as the white fringes, which are surrounded with a yellowish colour.

The caterpillar is cylindrically spindle-shaped, when fully grown from ten to twelve lines long, and two lines thick, dirty white, with scarcely visible brown single tubercles, emitting slender hairs. The head is chestnut brown, the back of the following segment rather darker, divided lengthwise by a whitish line, which line is sometimes continued indistinctly along the back; the belly and sixteen feet are bone-coloured. It prepares for itself, immediately on issuing from the egg, a web, or covered passage, with thick, strong threads, in which it lodges by day safe from the attacks of the bees, and only seeks its food, which consists of wax, at night, when the bees are at rest. At first, these caterpillars only live in the lower cells, but when they are bigger they ascend higher, lengthening their passage as they proceed; so that when there are many of them, in a hive, it is entirely filled with these webs. The bees which are entangled in them and cannot get away, die. Three hundred caterpillars have been found in a hive. They attain their full size within three weeks, and are then ready for entering the pupa state. When this is the case, they make for themselves a much firmer and entirely closed web, either in the above-named passages, or in a concealed corner of the hive. In this web the caterpillar lives from ten to twenty-eight days unchanged, but is finally transformed into a brown pupa, out of which the moth appears in fourteen days. Those which become pupæ in autumn lie the whole winter in that state. There are two generations of them in a year. The moth of the first generation appears in spring, and that of the second in the beginning of July. The female lays her eggs at night, in the cracks of the lower part of the hive, from which the young caterpillars find their way to the honeycomb.

There is but one sure method of clearing the bee-hives of this moth, and this consists in looking for and destroying the larvæ and pupæ. If the hives are examined only once a week for this purpose, any traces of covered passages will easily be perceived, and must be immediately removed, and destroyed with the caterpillars in them. The corners of the hive must also be closely examined, in case of cocoons being there, which must also be destroyed. A lighted candle is also recommended to be held before the hole of the bee-hive, that the moth, flying out to the light, may be burnt. But this is labour in vain, for the female does not leave the hive till she has laid her eggs; and it is only supernumerary males that perish in the flame. — *Kollar.*

The Clothes-Moth. (*Tinea vestianella.*) As soon as the caterpillar quits the egg, it begins to form a nest. For this purpose, having spun a thin coating of silk round its body, it cuts filaments of wool or fur close to the thread of the cloth, and applies the pieces to the outside of its case; which covering it never leaves except in cases of urgent necessity. When it wishes to feed, it puts out its head at either end of the case, as may be most convenient. When inclined to change its position, it protrudes its head and about half its body, and thus moves forward, dragging its case by fixing its hinder legs firmly in it: and when, from its increase in size, the case becomes too small, it makes an addition to it at each end. This operation can be readily traced by transferring it from cloth of one colour to another, when the addition will be conspicuous from the difference of colour. After changing into a moth, it sails in April, or May, it remains quiescent for about three weeks, when a small nocturnal Moth, of a silvery gray colour, appears forth. It is said that Moths never touch unscoured wool — that is, wool as it comes from the sheep's back, before any chemical process has been employed that will destroy it of its natural oil or smell. It is therefore recommended to be placed in layers of the clothes, or kept in small parcels in the corners of shelves or drawers. The most important, by far, of all the species is the Silkworm Moth. [See Silkworm.

Arctia: Stauropus: Cossus: Hepialus. — Such of our readers as may require further information respecting the habits and species of this most extensive family of insects, are referred to the works of Messrs. Curtis, Wood, Humphreys, and Westwood, British Moths; also to Mr. Haworth's

Epping), and to the papers of
inton and Douglas.

T. (*Motmotus*, or *Prionites Bra-*
A curious and handsome bird,
many parts of South America.
s of a dark rich green colour,
a long wedge-shaped tail, two
which extend some inches beyond
The shafts of these are stripped
ebs near the extremities, giving
very singular appearance. One
pose that these birds trimmed
rs thus themselves, for many are
quills perfect, and others partly
The Motmots are generally in
e deep woods, and are easily re-
y their note, *mot-mot*, slowly re-
here are several species of Mot-
edge of the beak in these birds is
th in the upper and lower man-

LON. (*Ovis Musmon.*) An ani-
sheep kind, called also the Mus-
biting the mountainous parts of
rdinia, Greece, &c., and which,
nature extremely wild, retains
racteristic marks of the primitive
general size of the Mouffion is
small fallow deer; but, though
h hair, it bears a stronger resem-
he ram than to any other animal,
ard to its horns, which sometimes
ast size, as well as in its general
m. The muzzle and the inside
are of a whitish hue, tinged with
t the other parts of the face are
ish gray. The body is covered
instead of wool; in which parti-
ists its chief difference from the
oct of the sheep: the upper part
wn, but the under part and the
he limbs are whitish. In summer
close, like that of a deer; in
ecomes rough, wavy, and a little
ealing at its roots a fine white
n. About the neck and shoulders

PPLON.—(OVIS MUSMON.)

under the throat, the hair is con-
onger than elsewhere.
ring to autumn the Mouffions
e little vallies among the upper
the mountains, on the young
he Alpine plants, and are said to
fat. As winter approaches, they
descend lower, and eat grass and other vegetables. The whole form of this animal seems better calculated for agility and strength than that of the common sheep; but still it is very timid, and, when closely pursued, does not run in a directly progressive course, but obliquely, from side to side, in the manner of other sheep; ascending the rocky mountains with great agility, and, like the wild goat, going over the narrowest and most dangerous passes with perfect safety. Their chace is dangerous and difficult; and they are so wild as to be seldom taken until shot by the hunters, who lie in wait for them among the mountains. The female is less than the male, and her horns never grow to the same magnitude as in the ram. These have sometimes been found to measure, in their convolutions, above two ells in length: with these they often maintain very furious battles among their own kind; and sometimes they are broken in the conflict. The young, when first born, are covered with a soft, gray, curling fleece, which gradually changes into hair towards the end of summer. Such is the sheep in its wild state; by no means that seemingly helpless animal which we view it under the shepherd's care; but in the highest degree active and vigorous.

MOUSE. (*Mus.*) A genus of Rodent quadrupeds, including not only what are usually termed *Mice*, but also the *Rats*. [The latter will be found under the letter R.]

The Common Mouse. (*Mus musculus.*) This little animal is a general inhabitant of almost every country in the world; for though it is said to be not a native of America, but taken there by European settlers, it is now found in every part of that continent. There are several varieties, distinguished by their colour; but the fur is usually of a brownish ash-colour above, and light beneath; the tail not quite so long as the body; and the ears about half the length of the head. As Mr. Bell observes, "there are few animals more generally associated with mankind, or whose very existence appears to be more essentially dependent upon human arts and human civilization, than this pretty, but annoying little pest. Domestic in its habits, nourished by almost every article of human food, and obtaining effectual shelter in the secret recesses of the habitations which human art has raised, it has accompanied man in all his adventures for colonization, and identified itself with every new territorial occupation of our race." All its actions appear to be regulated by fear and necessity. It seldom leaves its hole but when impelled thereto by the want of food; and then, unlike the rat, who travels from one house to another, it seldom quits the spot where it has once taken up its residence. The Mouse makes a nest not unlike that of a bird, and brings forth several times in a year, generally having from six to ten at a litter; when first born, mice are naked and helpless, but in about fifteen days they are able to shift for themselves. No animal has more enemies than the Mouse, and few are so incapable of resistance. Cats,

snakes, hawks, owls, weasels, and rats are their incessant destroyers; and but for their amazing fecundity, the extirpation of the whole race would seem to be a natural consequence. The Mouse is capable of being tamed, and will sometimes show considerable attachment to its keeper: the *albino*, or white variety, which may be perpetuated by breeding, and is frequently kept as a pet, is particularly so.

The HARVEST MOUSE. (*Mus messorius.*) This is the smallest, and one of the prettiest, of all quadrupeds that exist in Britain. The upper part of the body is of an iron colour, the lower being white; a straight line runs along the sides, dividing the colours; and the tail is somewhat hairy: the length of the body, from the nose to the tail, is two inches and a half; and that of the tail is about two inches. These little animals never enter houses, but during the harvest are carried into ricks and barns with the sheaves; and there they live and multiply. They build a curious nest amidst the straws of standing corn, and sometimes in thistles. In the winter months they appear to retire to burrows, where they hybernate; but their grand rendezvous seems to be in corn-ricks. They are very common in Hampshire, Wiltshire, and some of the neighbouring counties; yet they almost escaped the notice of naturalists till the appearance of White's History of Selborne, where its ingenious author thus describes the nest, &c. "They breed as many as eight at a litter, in a little round nest composed of the blades of grass or wheat. One of these nests I procured this autumn (1767), most artificially platted, and composed of the blades of wheat; perfectly round, and about the size of a cricket ball; with the aperture so ingeniously closed, that there was no discovering to what part it belonged. It was so compact and well filled, that it would roll across the table without being discomposed, though it contained eight little mice that were naked and blind. As this nest was perfectly full, how could the dam come at her litter respectively, so as to administer a test to each? Perhaps she opens different places for that purpose, adjusting them again when the business is over; but she could not possibly be contained herself in the ball with her young, which moreover would be daily increasing in bulk. This wonderful procreant cradle, an elegant instance of the effects of instinct, was found in a wheat field, suspended in the head of a thistle."

The LONG-TAILED FIELD-MOUSE, or WOOD-MOUSE. (*Mus sylvaticus.*) This species is found in fields and gardens, widely diffused throughout Europe, and is everywhere considered among the minor pests of the farmer and gardener. The head is long, the muzzle tapering; the eyes are black, large, and prominent; the ears large, and of an oblong oval shape; and the legs long. From the tip of the nose to the end of the body is about four inches and a half; and the length of the tail four inches; the head, back, and sides are of a yellowish brown hue, mixed with some dusky hairs; a yellowish gray patch on the breast white; and the tail slightly cove short hair. These animals retire among brushwood, and under the trees, where they form large mag grain, acorns, nuts, &c., for thei provision; but the injury done to th consists less in the quantity the Fi collect, than by the hogs rooting ground in their search after their The nests which they provide for the are generally very near the surfa heart, and frequently in thick tufts

The BARBARY MOUSE. (*Mus* This African species is intermediat between the common Rat and Mouse. It is of a darkish brown with five or six longitudinal stripes side, about half as wide as the in spaces, and becoming more indist

BARBARY MOUSE.—(MUS BARBA

wards the under parts, which ar white. Mr. Bennett observes, that fore feet only three of the toes ar visible; and that this circumstan tioned in the specific character Linnæus, has led many subsequent lists to doubt whether the Barbar really belonged to the genus *Mus*. himself, however, states, that rudim thumb, and also of a fifth toe, were able on a closer inspection; which subsequent examination of living sp has fully confirmed.

Amongst the Mice, though it be a distinct genus, is generally kn RUSTIC MOUSE, or FIELD VOLE. (*agrestis.*) This species, like the Field Mouse, inhabits corn-fields quents granaries, but is chiefly co the northern parts of Europe, as th rate tracts of Russia, Siberia, &c., particular seasons it appears in gre tudes, and devours great quantities It has a sharp nose, an oblong head, ears lined with fur; the colour of and head are ferruginous, with a d along the back; the belly and li whitish; above each hind foot there circle; the body is somewhat less th the Field Mouse; and the tail is only length of the body. It burrows at distance from the surface, each retrea a long gallery, with a chamber at in which the winter food is deposite

MUGIL; MUGILIDÆ. A ge family of Acanthopterygious fishes guished by a nearly cylindrical fus scales, and two distinct dorsals; the protected by large scales or polygons the snout is very short, and the mouth is transverse. The species a not only in the European seas, th

ging through the African
pe of Good Hope. They
e months of rivers in large
the habit of leaping high
[See MULLET.]

rbid animal between the
, differing in size, strength,
ding to the predominance
cies; those between a male
ing far superior to the pro-
s with a horse. In moun-
Mules are highly service-
of burden being either so
apable of enduring fatigue;
orm they fall very short of
uped the Horse: the Mule
unny head, long erect ears,
a thin tail. In Spain, Por-
East, and in South America,
uch valued for the saddle,
carriages. Savoy produces
but the finest are bred in
sometimes fifteen or six-
thick set, and capable of
nths together, with six or
eight on their backs. It
that they are altogether
ming their kind; but some
ve occurred in which fe-
had foals, and in which
pregnated females, both of
s species. Such instances
rare.

he name given to two ge-
pterygious fishes, viz. the
gil), and the red Mullets
rmer are distinguished by
al body covered with large
achiostegous rays; head
ed, the scales large; the
angular rise in the middle

ILL. CEPHALUS.

which fits into a corre-
in the upper; and very

LET. (*Mugil capito.*) This
habitant of the Mediterra-
an seas, where it is chiefly
g the shallow water near
is it by any means uncom-
en western and southern
al length is from twelve to
colour bluish-gray, darker
d silvery underneath: the
with several dusky stripes;
ve a tinge of bluish-white:
er large, pointed in front,
attened at the top; cheeks
silvery white; the mouth
ngue rough: the first dorsal fin, which is situated on the middle of the back, consists of four very strong rays; the second dorsal fin, placed opposite the anal, has only soft rays; and the tail is considerably forked. In the spring and early summer months this fish, like the salmon, ascends rivers to a considerable distance, and when preparing for these expeditions is observed in shoals near the surface of the water; but they are so extremely wary and active, that when surrounded by a net, the whole shoal frequently escapes by leaping over it. They rise freely at the flies used for trout, and when hooked, require great care in the management of them, as they are strong in the water, and plunge violently. They are fond of rooting in the sand or soft mud in search of food, leaving ample evidence of their having been so employed, in the round holes made by them in the operation.

The THICK-LIPPED GRAY MULLET. (*Mugil chelo.*) This species is distinguished from the foregoing chiefly by its large and fleshy lips, the edges of which are ciliated, and through their thickness the teeth penetrate like so many hairs. Body solid; scales large; tail broad and concave; colour of the head and back greenish; all besides silvery, with six or seven parallel lines along the sides, of the same colour as the back. This species is common on many parts of the Devonshire coast in the autumn, and is also occasionally seen in larger shoals on the east coast of Scotland.

The SHORT GRAY MULLET. (*Mugil curtus.*) This is a smaller and less well-known species than either of the preceding; the body is also deeper in proportion; the head wider, more triangular and pointed; the eye larger in proportion; and the fin-rays longer, particularly those of the tail. In colour it nearly resembles the species first described.

The AMERICAN MULLET. (*Mugil alburnus.*) A fish greatly allied to the common Mullet, but of a more slender form; mouth small and toothless; tail large and forked. It inhabits the American seas, and is abundant about the Bahama Islands. Its flesh is considered excellent.

Fish of the genus *Mullus* are distinguished by the oblique form of their head; by two long appendages under the chin, and large scales on the head and body, which are easily detached; the body oblong, and generally of a red or yellow colour; and the eyes situated very close to each other.

The PLAIN RED MULLET. (*Mullus barbatus.*) This fish is caught in the Mediterranean; and its usual length is about six inches. The head is remarkable for its almost vertical profile: the body is pretty thick; the back is rather flat; and from the head to the tail the fish gradually diminishes in thickness. In colour and general appearance it very much resembles the species just described: the scales are thin and easily separated, and when rubbed off, the skin itself appears of a brighter red. It is generally considered as a very delicate fish; and is celebrated for having been the fashionable

object of Roman luxury, and for which such enormous sums were paid; though it is probable that the high estimation in which it was held by those ancient epicures was more

RED MULLET.—(MULLUS BARBATUS.)

owing to its elegant appearance than to its real merit as a food. To such a pitch, indeed, was their "refinement in luxury" carried, that before the fish was dressed, it was brought alive into the apartment in a glass vessel, in order that the guests might enjoy the pleasure of contemplating the beautiful changes of its evanescent colours during its expiring agonies; immediately after which it was prepared for the repast.

MUNTJAK. (*Cervus muntjac.*) An animal of the Deer tribe, about one-fifth larger than the Roebuck, being about two feet two inches high at the shoulders; head large; ears rather large; eyes large, with lachrymal sinuses; tail short and flattened; general colour reddish-brown above; belly and front of the thighs pure white. The male has large canines in the upper jaw; the female has none, nor has she horns. The Cervus Muntjak is a native of Java; and is described by those who are fully acquainted with its character as possessing a great portion of craftiness, combined with much indolence. It has a strong scent, and is easily tracked by dogs. When pursued, it does not go off, like the stag, in any accidental direction: its flight indeed is very swift at first, but it soon relaxes, and, taking a circular course, returns to the spot from which it was started. After several circular returns, if the pursuit be continued, the Muntjak thrusts its head into a thicket, and in this situation remains fixed and motionless, as in a place of security, and regardless of the approach of the sportsmen. If it remains unobserved, it is still unwilling to quit its haunts: and experienced hunters, acquainted with its natural disposition, after an unsuccessful pursuit, return the following day, and in many cases find the object of their previous chase in the same spot. The native dogs, vulgarly denominated pariahs, are regularly trained to the sport: and many of them are extremely ardent and courageous in the pursuit. The male animal possesses a great share of courage, and when the dogs are at bay with him, with his tusks he makes a most vigorous defence; and many dogs are wounded in the attack. But although possessed of great courage, the life of the Muntjak is not tenacious, and the sportsman, on arriving at the spot, generally dispatches it with small shot. The natives of the most distant districts are in the habit of bringing their best dogs to the capitals, on occasion of their half-yearly attendance, to perform the feudal services to the s when their sports afford an occasion ment to the European inhabitant modes of chase are also employe natives of rank. One in particular i in the western parts of the island. is surrounded by a line of hunters, Muntjak is driven in towards a cent forty or fifty animals are in this often obtained at a single pursuit. the hunters are mounted, and the trained to the chase. The sports deavours to overtake the animal, a it by a stroke with a sword. The in of Pugar and Blambaugen, two pro the eastern extremity of Java, pos small population, but abounding in plains and acclivities, which afford range and abundant pasture, are pa skilled in this sport. The best h trained for it: the sportsman, w saddle, mounts on the naked ba carries on the pursuit with a fre petuosity, at the risk of his limbs a In Banka a less arduous, but more de method is employed to take this a long rope of rattan is suspended, at height above the ground, between t numerous nooses, of the same mater from this, in a close and continue and the Muntjak, driven towards it, by dogs and blinded by fear, does ceive the slender rattan, and thru head into a noose, is strangled on t The Muntjak is impatient of cap and requires a considerable range comfortably: it is cleanly in its ha delicate in its choice of food. The f said, affords an excellent venison, often found on the tables of Europea are indebted to Dr. Horsfield's a Zoological Researches in Java for going particulars.

MURÆNIDÆ. By this term is of fishes of the Eel tribe known. distinguished by their long, slender like bodies, covered with a thick skin, and having the scales very deeply imbedded, and often scarcely tible. The gill-opening is small, ated far back; by which the brans more protected, and the fish enabled a considerable time out of water.

MUREX. A genus of Mollusca, ing numerous species, many of t markable for the form and beautiful ing of the shells, particularly thos come from the seas of tropical climat shell is oblong; spire short, with more longitudinal, continuous, b spinose, or fringed varices; chann rally long, and sometimes closed; i smooth; mouth round and small culum horny. The head of the animal has too long tentacula f with eyes, foot round, and general The general character of the ge be seen in the accompanying figu *Murex tenuispina*, or Venus's C entirely beset with long sharp spine the animal has the power of d and replacing by a smooth and even

wherever it finds it necessary, in enlarging its shell, to remove them. Others also

MUREX HAUSTELLUM.

have their distinguishing peculiarities, such as the Rosebud Murex, with its pink-tipped fringes; the Ducal Murex, the Royal Murex, &c.; and are much sought after by collectors.

MURIDÆ. (*Mus*, a mouse.) The name of an extensive group of Rodent animals (of the Linnæan order *Glires*), consisting of *Mice*, *Rats*, and other animals allied to them; which, though none of them attain to any considerable size, become worthy of serious notice from their prodigious multiplication, and the destructive influence they exert over vegetation and the products of the husbandman's toil. They are distinguished by their long, round, scaly tails, and by the presence of only three molars in each jaw. [See MOUSE: RAT.]

MUSCICAPIDÆ. A family of insectivorous birds which take their prey as they fly. These are a multitude of species, diffused over every quarter of the globe, which, although differing in many points of generic distinction, may be all known by their essential characteristics—a notched, depressed, and angular bill, with strong hairs surrounding the base. [See FLY-CATCHER: RHIPIDURA: TODY.]

MUSCIDÆ. A most extensive family of Dipterous insects, distinguished by having a proboscis distinct, short, thick, membranaceous, terminated by two large labial lobes, and entirely retractile within the oral cavity; the antennæ are triarticulate; the body is short and robust; the legs and wings are of moderate length; and the nerves extend to the posterior extremity of the wings. The largest known species (*Musca grossa*) is nearly as large as a Humble-bee. It is black, very bristly, with the head buff, eyes brown, and base of the wings reddish. It makes a loud buzzing, settles upon flowers in woods, and often upon cow-dung, on which its larva resides: the body of the larva is yellowish, shining, conical, with a single hook, and two fleshy horns at its anterior extremity, the other being terminated by a circular plate, upon which are two spiracles, each placed upon a reticular lobe, elevated in the middle: the segment after the head is also furnished on each side with a spiracle. —*Musca vomitoria*, the common Meat-fly, has the forehead fulvous, the thorax black and abdomen blue, with black marks. It possesses a remarkably fine sense of smelling, and makes a loud buzzing noise, when it enters our houses in order to deposit its eggs on meat. When ready to assume the pupa state, it quits its food and descends into the earth, or else undergoes *its change in some dry and retired situation*. —*The species of Musca domestica*, the small common house-fly, are found more especially in houses, settling upon and sipping at almost every article of food. Their larva is elongated, slightly attenuated in front, with a small head; and the terminal segment bearing a pair of spiracles, entire, and without any radiating points. —Amongst the exotic species of this family many exhibit remarkable variations of structure; as the splendid *Rutilia* from New Holland; the Indian genus *Celyphus*, and others.

Vincent Kollar, in his "Treatise on Insects," observes, that "the species of true flies (*Muscidæ*) deserve to be mentioned as particularly troublesome guests in our houses. Although their bites do not cause pain, still it is extremely disagreeable to feel them crawling over our faces, particularly when we are in a state of repose. But they may even be dangerous, particularly in their larva state. The larvæ or maggots feed upon animal as well as vegetable matter, particularly when it begins to decay. Open wounds, when they begin to suppurate, attract flies, and they deposit their eggs in them. In a very short time the maggots are hatched, and increase, by their sucking, the malignity and pain of the wound. They will even deposit their eggs on sound parts if they happen to be smeared with matter fit for the nourishment of their progeny." And he gives instances of cases in which much pain and suffering were occasioned by the eggs of flies having been thus introduced into the ears and nostrils of females.

MUSK, or MUSK-DEER. (*Moschus moschiferus.*) These animals, which give name to the well-known perfume, inhabit the great extent of elevated country which occupies a large part of central Asia, and are principally found in Thibet, Nepaul, Tonquin, and the districts adjacent to the north of

MUSK.—(MOSCHUS MOSCHIFERUS.)

India and China. Their favourite haunts are the tops of mountains covered with pines, where they roam in places most difficult of access, resembling in their manners the Chamois and other mountain quadrupeds. In size and general appearance the Musk-deer is not very unlike a small roebuck, the length

of the body being about three feet four inches. The upper jaw is considerably longer than the lower, and is furnished on each side with a curved tusk, about two inches long, the inner edges of which are quite sharp. The general colour of the body is a kind of deep iron-gray: the ears are erect, about two inches long, of a deep brown colour externally, and pale yellow within; the hoofs long, and much divided; and the tail extremely short. These animals are hunted for the sake of their musk; which is contained in an oval receptacle, or small glandular pouch, situate at the hinder part of the abdomen, and peculiar to the male. The unctuous secretion contained in this receptacle is of the most powerful and penetrating nature; but from the ease with which it can be adulterated, very little of it reaches Europe in a pure state. The follicle containing the musk is covered with short brown hair, and is more or less full according to the age, health, &c. of the animal: the musk, when dry, is of a dark reddish brown colour; has a bitterish sub-acrid taste; and a fragrant smell, agreeable at a distance, but so strong and pungent as to be highly unpleasant when quite near. It is held in high estimation as a medicine among oriental nations.

The JAVANESE MUSK DEER. (*Moschus Javanicus.*) This animal is rather larger than a full-sized hare: body heavy; limbs very delicate: head arched and long; eyes

JAVANESE MUSK DEER.
(MOSCHUS JAVANICUS.)

large, but not expressive. Its general colour is brown mixed with gray or yellowish reflections, the yellow predominating along the back and tail, on the legs, the neck, and head.

There are other Musk-deer, which are very small, and to which the general term of *Chevrotains* is given: they are inhabitants of Java, Sumatra, Ceylon, and Southern India; and are adapted to a forest rather than a mountain life. They are timid and wild in their native haunts, but gentle and mild in captivity, and particularly elegant in their appearance and movements.

MUSK OX. (*Ovibos moschatus.*) This animal, which by some naturalists has been considered as intermediate between the sheep and ox, inhabits the more northern parts of America, where the country is mostly rocky and barren, except on the banks of the larger rivers. When they are fat the flesh is well-flavoured, but smells strongly of musk. They herd together in flocks of twenty or thirty. The Musk Ox is about the height of a deer, but of much stouter proportions. The horns are very broad at the base, covering the forehead and crown of the head; and curving downwards between the eye and ear, until about the level of the mouth, when they turn upwards. The head is large

MUSK OX.—(OVIBOS MOSCHATUS.)

and broad, and the nose very obtuse: the ears are short, and not very conspicuous. The hair of the body is in general brown: on the neck and between the shoulders it is long, matted, and somewhat curled; and this bushy state of the hair on those parts causes the animal to appear humped. On the back and hips the hair is also long, but lies even and smooth; and on the shoulders, thighs, and sides, it is so long as to hang down below the middle of the leg. The tail is so short as to be concealed in the fur. Beneath the long hair, on all parts of the animal, is a fine kind of soft ash-coloured wool, which, if it could be procured in sufficient quantity, would be highly useful to the manufacturer. The legs of the Musk Ox are short and thick, and furnished with narrow hoofs, resembling those of the Moose. The female is smaller than the male, and has also smaller horns, whose bases do not meet. Her general colour is black, except that the legs are whitish, and between the horns there is a bed of white hair intermixed with rust colour: an elevated ridge or seam of dusky hair runs along the back, and on the middle of the back is an oblong patch or bed of white hair, shorter than the rest, and which has been termed the saddle. The Musk Ox runs nimbly, and climbs hills and rocks with great ease. When pursued by the hunter, they seek for safety by instant flight; but the bulls are sometimes dangerously irascible when closely pressed. Perhaps the only specimen now in Europe is that preserved in the noble collection at the British Museum. This individual was brought by Capt. Parry from Melville Island.

MUSK-RAT, called in Canada, where it abounds, the MUSQUASH. (*Fiber zibethicus.*) This animal is about the size of a small rabbit, and of a reddish-brown colour; its feet are partly webbed; and its tail somewhat flattened. It has four very strong cutting teeth, of which those in the lower jaw are nearly an inch long: the fur on the whole body is soft and glossy and beneath is a fine fur or thick down, as in the beaver. It has also similar instincts, and disposition;

ving in a social state in the winter, in cunningly constructed huts, built near the edge of some lake or river. These huts are about two feet and a half or three feet in diameter, plastered with great neatness in the inside, and covered externally with a kind of basket-work, of rushes, &c., carefully interlaced together so as to form a compact and secure guard, impermeable by water. The entrance to them is under water, for the purpose of procuring food, which consists entirely of roots and vegetables. In summer these creatures wander about in pairs, feeding occasionally on herbs and roots: at this season they become extremely fat, and are much sought after, partly for their flesh, but chiefly for their skins, which are valuable. Their odour resembles that of musk; and the skin, when taken from the body, still retains the scent. This musky odour is owing to a whitish fluid deposited in certain glands near the origin of the tail. The fur is used in hat-making.

Dr. Richardson states that the Musquashes vary considerably in size, and that though they have a strong musky smell, particularly the males, in spring, their flesh is eaten by the Indians, who prize it for a time when it is fat, but soon tire of it. They generally have three litters in a year, and from three to seven in a litter. Great numbers are destroyed by the inundations which cover the low grounds where they haunt, and in severe winters they are almost extirpated from some localities by the freezing of the swamps inhabited by them. Famine in such cases prompts them to destroy each other; and they are subject to some disease which occasionally proves fatal to vast numbers. The principal seasons for taking the Musquash are, the autumn, before the snow falls, and the spring, after it has disappeared, but while the ice is still entire. In the winter time the depth of snow prevents the houses and breathing-holes from being seen. One of the first operations of the hunter is to stop all the holes with the exception of one, at which he stations himself to spear the animals that have escaped being speared through the walls of their houses, and come hither to breathe. In the summer the Musquash burrows in the banks of the lakes, making branched canals many yards in extent; and forming its nest in a chamber at the extremity, in which the young are brought forth. When its home is attacked in the autumn, it retreats to these passages, but in the spring they are frozen up. It is a watchful but not a very shy animal. It will approach very near a boat or canoe, but flies instantly on perceiving the flash of a gun. It may be frequently seen sitting on the stone of small muddy islands in a rounded form, and not easily to be distinguished from a piece of earth, until, on the approach of danger, it suddenly plunges into the water. There are several varieties of this animal.

MUSLIN (MOTHS). A name applied by collectors to Moths of the genera *Psyche*, *Fenkophora*, *Nudaria*, &c.

MUSOPHAGA: MUSOPHAGIDÆ; or PLANTAIN-EATERS. *A genus of* Scansorial birds, evidently allied to the Insessorial or Perchers. The base of the bill is enormously dilated, so as to spread like a casque or helmet over the fore part of the head as far as the crown, where its thickened sides form a semicircle. Nostrils oval, open, placed nearer to the tip than to the eyes, and pierced in the substance of the bill. The species *Musophaga violacea* here figured is a very magnificent bird. Bill rich yellow, passing into crimson; orbits naked, and, like the compact velvety feathers of the crown, glossy crimson; a white stripe

PLANTAIN-EATER. (MUSOPHAGA VIOLACEA.)

beginning below the eye and extending above the ear; secondary and part of the primary quills carmine, margined and tipped with blackish violet, which is the general colour of the plumage, changing into a very deep green on the under parts, which is very rich on the tail; legs strong and black; gape wide. The Gold Coast and Senegal, in Africa, are its localities.

MUSSEL. (*Mytilus.*) A genus of Molluscous animals, the characters of which are, that the shell is bivalve, of an oblong triangular form, terminating in a point, and having its two extremities equal. The head of the animal is in the acute angle. The Common Salt-water Mussel (*Mytilus edulis*) is distinguished by a strong shell, slightly incurvated on one side, and angulated on the other; the end near the hinge being pointed, and the other rounded. Mussels abound on the rocks of our own coasts, to which they are fixed by their byssus. From the circumstance of their being always found attached to rocks, stones, or to the shells of each other, they have been supposed by many to be incapable of progressive motion; but although they have no tendency to change of place, they seem possessed of a certain degree of locomotive power; and their manner of exerting it has been examined and well explained by Reaumur. He discovered that their mode of progression consisted in thrusting their tongue-like foot out of the shell, curving it, hooking it to some adjacent body, and thus drawing themselves forward to the point of attachment.

Although Mussels commonly afford a supply of wholesome food, they sometimes (in spring) acquire very poisonous property

and many persons have been suddenly attacked with violent symptoms after eating them. It frequently happens, indeed, with some constitutions, after partaking of certain kinds of shell-fish, that intolerable itchings all over the body take place, accompanied by great restlessness and agitation, and followed by cutaneous eruptions.

MUSTELA: MUSTELIDÆ. A genus and family of carnivorous Mammalia, distinguished by the length and slenderness of their bodies. The characters of this genus are: six cutting-teeth in each jaw, the upper being erect, acute, and separate; the lower more obtuse; the tongue smooth. [See WEASEL.]

MUTILLIDÆ. A family of Hymenopterous insects, generally found in hot sandy situations, and bearing considerable resemblance to other sand-wasps. They are solitary in their habits: the males occasionally frequent flowers; but the females are always found on the ground, and they run with great quickness, secreting themselves, on the approach of danger, amongst grass and under stones. The antennæ are filiform or setaceous, the first and third joints being elongated; the labrum is transverse and ciliated; the mandibles notched; and the body often very much clothed with hair. The females are destitute of wings and ocelli, but they are provided with a powerful sting.

MYA. A genus of Molluscous animals, inclosed in a bivalve shell. The Myæ are to be found both in the ocean and in rivers: the marine kinds generally burrow in the sand, and those which inhabit rivers are generally found in the mud. They are of considerable importance, in consequence of the shell sometimes producing a quantity of pearls; and the shell is well known by the name of the Pearl Mussel. One end of this shell gapes considerably, and at the aperture the thick epidermis is lengthened out into a tube, which can be withdrawn by the animal at pleasure. It is found on the shores of the European, Asiatic, and African seas; and in several places it is used as food; it is also devoured by various aquatic birds. According to Camden, Sir John Hawkins had a patent for fishing for it in the river Irt, in Cumberland. There was also a great fishery for pearls in the river Tay, which extended from Perth to Loch Tay; and it is said that the pearls sent from thence, from the year 1761 to 1764, were worth 10,000*l*. At the present day it is not uncommon to find pearls in these shells which bring from 1*l*. to 2*l*.

MYCETES. A genus of *Quadrumana* inhabiting the American continent, and popularly called *Howling Monkeys*. They are distinguished by a pyramidal head, the upper jaw of which descends much below the cranium, while the branches of the lower one ascend very high, for the purpose of lodging a bony drum, formed by a vesicular inflation of the hyoid bone, which communicates with their larynx, and imparts to their voice prodigious volume and a most frightful sound. Hence the appellation bestowed on them.

They are shaggy animals, about
a fox, of different shades of brow
ish; the females carry their
their shoulders, and some of th
ferently coloured from the m

HOWLING MONKEY.—(MYCETES

are of a social disposition and gr
ment; and most of them have t
They utter their hideous yells a
by night; and subsist on fruits a

MYCETOPHILIDÆ. A s
Dipterous insects, of small and a
They are found in damp situatio
various plants; and many of
enter our houses, and are fou
windows. They are capable of
means of their hind legs; and
guished by having two or thr
sized ocelli; eyes generally n
not rostrated: the antennæ s
never fasciculated.

MYCTERIA. A genus of
Birds allied to the Storks, of whi
several species: the best know
Americana, or common Jabiru
BIRU.]

MYLABRIS. A genus of Ves
tles (*Cantharidæ*). The head
broad, and rounded behind;
nearly orbicular; and the ely
inclined at the sides. They hav

MYLABRIS CATHORII.

tennæ, with eleven distinct joi
sexes. This genus abounds in spe
and Asia being the chief coun
they are found. *Mylabris richardi*
here figured, inhabits the south

Mylodon are eighteen in
ach side above and four
imple, long, fangless, of
and nearly straight, with
e first tooth in the upper
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re, and the peculiar con-
ws, it is concluded that it
w slender terminal twigs
ect resembling the giraffe,
the sloth. The extra-
of the giraffe raises its
o its food; the trunk of
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ince: but the Mylodon and
short and massive necks,
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t of certain ant-eaters, he
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rior extremities, and the
ss of muscular power, as
d crest of the sacrum, he
r evidence against the
while he believes that the
ed a tripod with the hind
ell support the weight of
ave the anterior limbs at

patible with the different degrees of resistance to be overcome. In the small climbing sloth the claws are long and slender, having only to bear the weight of the animal's light body, which is approximated by the action of the muscles towards the grasped branch, as to a fixed point. The stouter proportions of the prehensile hooks of the Mylodon accord with the harder task of overcoming the resistance of the part seized and bringing it down to the body. For the long and slender branchial and anti-branchial bones of the climbing sloth we find substituted in its gigantic predecessor a humerus, radius, and ulna of more robust proportions, of such proportions, indeed, in the *Mylodon robustus* as are unequalled in any other known existing or extinct animal. The tree being thus partly undermined and firmly grappled with, the muscles of the trunk, the pelvis, and hind limbs, animated by the nervous influence of the unusually large spinal chord, would combine their forces with those of the anterior members in the efforts at prostration. And now let us picture to ourselves the massive frame of the Megatherium, convulsed with the mighty wrestling, every vibrating fibre reacting upon its bony attachment with a force which the sharp and strong crests and apophyses loudly bespeak:—extraordinary must have been the strength and proportions of that tree, which, rocked to and fro, to right and left, in such an embrace, could long withstand the efforts of its ponderous assailant."

MYOCHAMA. A genus of Molluscs, of which only one species is known (the *M. anomioides* of New South Wales), described by Mr. Sowerby as—"inequivalve, irregular, attached, sub-equilateral; attached valve flat, with two marginal, diverging teeth, and one end of a little testaceous appendage fixed between them by a horny cartilage; free

composed of an extensive series of segments, each provided with a pair of legs. [See IULUS: CENTIPEDE: CHILOPODA: CHILOGNATHA: SCOLOPENDRA.]

MYRMECOBIUS. A genus of marsupial animals which feed on ants. *Myrmecobius fasciatus*, the only known species, is a native of Australia: it is formed like a squirrel, and is of the size of a rat: has fifty-two teeth; and is marked on the lower part of the back with white bands on a reddish ground tint.

MYRMECOPHAGA. The name of a genus of edentate quadrupeds. [See ANT-EATER.]

MYRMELEON; MYRMELEONIDÆ. A genus and family of Neuropterous insects, one species of which, the *Myrmeleon formicaleo*, or ANT-LION, has been described under its well-known English name.

MYSIS, or OPOSSUM SHRIMP. (*Mysis vulgaris.*) This curious little Crustacean bears, in its general form, a strong resemblance to the ordinary Shrimps; it is, however, distinguished from the true Decapoda by the external position of its branchiæ, &c. In regard to the number of the feet, it holds an intermediate place between the Decapods and ordinary Stomapods. Each of the legs has a natural appendage, so much developed as to make the limb appear bifid: and thus, including the feet-jaws, which also possess similar appendages, the Opossum Shrimp may be said to have thirty-two legs. The

OPOSSUM SHRIMP.—(MYSIS VULGARIS.)

common name of this Crustacean is derived from the peculiar conformation which enables it to afford a special protection to the eggs. Attached to the inner division of each of the posterior legs the female has a large concave scale: and thus a pouch is formed, which is capable of considerable extension. Here the eggs are received when they quit the ovarium, and here the young remain till their form is fully developed; when the parent opens the valves of the pouch, and liberates the whole brood at once. These are the chief crustacea which inhabit the Arctic Ocean in such amazing numbers as to constitute the principal food of the Whalebone Whale, and to support the prodigious shoals of Salmon which resort thither in the months of July and August.

MYTILACEÆ. An order of Mollusca, of which the common *Mussel* furnishes an example.

MYTILUS. [See MUSSEL.]

MYZANTHA. A genus of Australian birds, belonging to the family *Meliphagidæ*. One species is the *M. Garrula*, or GARRULOUS HONEY EATER, called the *Miner* by the colonists in Van Diemen's Land: it moves about in small flocks of from four to ten in number. Mr. Gould tells us that it is very restless and inquisitive if its haunts be intruded upon; "no sooner does the hunter come within the precincts of its abode than the whole tribe assemble round him and perform the most grotesque actions, spreading out their wings and tail, hanging from the branches, and keeping up all the time

AUSTRALIAN BELL-BIRD. (MYZANTHA MELANOPHRYS.)

one incessant babbling note;" by following up the intruder in this way, "they become very troublesome and annoying, awaking as they do the suspicions of the other animals of which you are in pursuit." It feeds among the branches of the Eucalypti, from the pollen of the flowers of which it obtains abundance of genial food; but it also preys with avidity on insects. Its nest is cup-shaped, and very neatly built of fine twigs and coarse grass, and lined with feathers, and it is about the size of that of the common Thrush (*Turdus musicus*). Another pretty yellow-olive species peculiar to New South Wales is the AUSTRALIAN BELL-BIRD (*Myzantha melanophrys*), figured in our cut from Mr. Gould's fine work. The note of this is peculiar, and from it the colonists have given the species the name of *Bell-bird*; the sound having been compared, and justly, to the sound of distant sheep-bells: and when this is poured forth from a hundred throats it produces a most singular effect. The Bell-bird of Demerara is quite another bird. [See CAMPANERO (*Procnias carunculata*).] By some naturalists the generic name given to these birds is *Manachina*. Other species will be found figured in the great work of Mr. Gould.

NAIDES. (*Nais.*) These are small semi-aquatic worms, of the order *Terricolæ*, closely allied to the Earthworms, but having the elongated body, and the rings less marked. They live in holes which they perforate in mud at the bottom of water, and from which they protrude the anterior portion of the body, incessantly moving it. Some have black points upon the head, which have been regarded as eyes. Many species exist in our fresh waters; and their reproductive power is not less astonishing than that of the Hydra or Polypus. Some have very long bristles; others a long protrusile trunk; and several have small tentacles at the hind extremity.

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ngth, and tapering to a point:
and whiter than ivory, for which
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was also in high repute for its
edicinal powers. The Narwhal
from twenty to thirty feet in
the mouth to the tail; some-
more; and it is occasionally,
very often, found with two of
, or tusks, sometimes of equal
sometimes very unequal. The
is animal is short, and convex
mouth small; the spiracle or
ole duplicated within; the tongue
ectoral fins small; the back fin-
, and rather wide; becoming gra-
minated towards the tail, which,
Whales, is horizontal. The skin
narbled on the back, lighter on
d nearly white on the belly: it
oth, and there is a considerable
or blubber beneath. The Nar-
y inhabits the arctic seas; and
aid to consist of the smaller kinds
medusæ, and other marine ani-
taken by means of the harpoon;
h is eaten by the Greenlanders.
oth swift and strong, as well as
d with such a prodigious weapon,
al is one of the most peaceable
of the ocean.
the authority of Mr. Bell for
in the general form of the body,
se and rounded head, its small
less back, and in the form and
f the cranium—the Narwhal ap-
ery near to the Beluga. Of its
rn, this gentleman thus speaks:
extent the ascribed power of the
be true, we have but little means
ing; but there is the structural

taining the curious Bornean long-nosed Monkey. [See PROBOSCIS MONKEY.]

NASSA. A genus of Mollusca, inhabiting a small globular or oval shell, according to the spire, which in some is short, and in others long; mouth oblong, notched; inner lip thickened, and spread out, occasionally very large; right lip often wrinkled; operculum horny. By some authors this genus is united to *Buccinum*, on account of the little tooth-like projection terminating the columella. The head of the animal is large, the proboscis short, or altogether wanting; two tentacula, with eyes in the middle; foot very large. They abound in the South of Europe, and some are occasionally seen on our own coasts. They may sometimes be seen feeding on the *Mactra*, which they effect by piercing the shell with their proboscis, and extracting the contents through the small round aperture which by this means they have formed.

NASUA. A genus of Plantigrade quadrupeds, distinguished by the elongation and upward curve of the snout, which the animals belonging to this genus have the power of turning about, and uprooting the earth, when in search of worms, &c. [See COATIMONDI.]

NATATORES. The name given to an Order of birds, viz. those which are *web-footed*, and otherwise adapted for an aquatic life. This order includes five families; the *Anatidæ*, or Ducks; the *Colymbidæ*, or Divers; the *Alcidæ*, or Auks; the *Laridæ*, or Gulls; and the *Pelicanidæ*, or Pelicans. The form and size of the wings, and the powers of flight, vary greatly in the different tribes of this order; but they are all most easily distinguishable from the rest of the feathered race on account of the peculiar structure and position of their feet; the toes being invariably connected together by a

inside smooth; operculum shelly in some species, horny in others; epidermis thin, light, and transparent. The head of the

NATICA ELEMEDEA.

animal is very large, having two tentacula with eyes at the base; foot large and thin. The straight, callous, smooth edge of the columella serves to distinguish this genus from Nerita, Helix, &c. There are very many recent marine species, and not a few fossil.

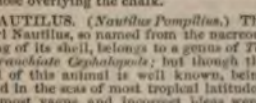
NATRIX. A genus of *Colubridæ*, a family of snakes destitute of poison-fangs; of which our common harmless snake (*Coluber natrix*) is a type. [See SNAKE.]

NATTER-JACK. (*Bufo calamita.*) The English name of a species of Toad, of a lightish yellow colour, inclining to brown, and clouded with dull olive; but its most distinguishing mark is a bright yellow line running down the middle of the back. It never leaps, nor does it crawl with the slow pace of a toad, but its motion is more like running. They are found in considerable numbers near stagnant pools and ditches, where they congregate for the purpose of breeding; and their hoarse voices are heard at a great distance.

NAULTINUS. A genus of Lizards, containing four or more generally green coloured species, natives of New Zealand. They are allied to the Geckos.

NAUTILITES. The name given to numerous chambered shells existing in a fossil state, nearly resembling the Nautilus, above described, and which are found in almost all marine strata, from the oldest limestones and sandstones of the Silurian system, down to those overlying the chalk.

NAUTILUS. (*Nautilus Pompilius.*) The Pearl Nautilus, so named from the nacreous lining of its shell, belongs to a genus of *Tetrabranchiate Cephalopoda*; but though the shell of this animal is well known, being found in the seas of most tropical latitudes, the most vague and incorrect ideas were, until lately, formed of its living inhabitant:



NAUTILUS AND SECTION OF SHELL.

we believe, indeed, it was only in 1829 that this animal was known with any certainty, one having been caught alive by Mr. G. Bennett, near the New Hebrides Islands; which, preserved in spirits, is now in the museum of the College of Surgeons. The Nautilus is very rarely met with in the living state, owing to its being an inhabitant of the open sea, and possessing the power of sinking at the slightest alarm. Externally the shell presents nothing remarkable, being a flattened spiral; but on examining its interior, we find it divided into chambers, by a large number of transverse partitions of shelly matter; sometimes as many as thirty or forty separate chambers or divisions, each communicating with the rest by a small tubular hole near the centre. The opening or mouth of the shell therefore presents a large but shallow concavity, pierced with a central or nearly central hole, while beyond it lie all the divisions alluded to. The outer chamber is by far the largest, and to this the body of the animal is restricted; but it maintains a connection with the rest by means of a membranous tube, called the *siphuncle*, which passes through the centre of each partition, and thus penetrates even to the innermost and smallest chamber. These animals are furnished with numerous tentacula, short, slender, and unprovided with suckers. They usually remain at the bottom of the water, and are able to creep along rather quickly, supporting themselves upon their tentacula, with the head downwards, and the shell raised above. After stormy weather, as it becomes more calm, they may be seen, in great numbers, floating upon the surface of the waves, with the head put out, and the tentacula resting upon the water, the shell at the same time being undermost: they remain, however, but a short time sailing in this manner, as they have the power of readily returning to their situation at the bottom of the sea, by merely drawing in their tentacula and upsetting the shell.

NAVICELLA. A genus of fluviatile Mollusca, inhabiting the clear rivers of India, the Isle of France, &c. The shell is transversely oval; dorsal surface convex; with the apex straight and bent down to the right, not spiral; operculum testaceous, flat, subquadrate, with a lateral articulation; the shell, indeed, altogether much resembling a *Patella*. The animal is distinguished by a large head, having two tentacula, the eyes placed on the summit of two small protuberances at their base; foot large; they creep well on the rocks, and do not continue fixed to one spot.

NAXIA. A genus of short-tailed Decapod Crustacea, containing some singular spine-fronted species of Crabs, found in the Eastern Seas.

NEBALIA. A genus of singular Crustacea belonging to the Entomostraca, order *Phyllopoda*, and containing two or more interesting British species.

NECROPHAGA. The appellation given by Latreille to an extensive group of Coleopterous insects, highly serviceable in removing the decaying remains of animal matter and such kinds of impurities. As-

Mr. Westwood's definition, they
ly distinguished by having the
gradually or suddenly thickened
s; the mandibles generally robust
ded; the maxillæ with the outer
t, but not palpiform nor articu-
e maxillary palpi with the basal
small; the body often oval or
ith the prosternum not anteriorly
; the elytra sometimes shorter than
en; the legs formed for running,
contractile." Though the Necro-
general habit on the decaying
f animal matter, some of the spe-
upon decaying fungi and other
remains; while in others are to
vestiges of those predaceous habits
acterize another group of beetles.
Art.]

OPHORUS; or SEXTON-
S. A genus of Coleoptera belong-
preceding group, and containing
cies found in Europe and North
cipally; though some are found
e mountains of South America and
e habits of all the species are be-
e similar to the example referred
h. Our figure represents the *Ne-*
vespilio, perhaps the first species
observations were made. It has

EXTON OR BURYING BEETLE.
NECROPHORUS VESPILLO.)

red, and banded with black.
Newman's interesting History of
e extract, as a good summary
bits of the genus, his account of
of the GREAT BLACK SEXTON
Necrophorus germanus). — "It is
inch in length, of a black colour,
d that the hands smell for hours
ling it; and if it crawl on woollen
ich are not washed, the smell con-
several days. The Sexton Beetle
s in the bodies of putrefying dead
hich, when practicable, it buries
ound. In Russia, where the poor
buried but a few inches below the
the ground, the Sexton Beetles
ceives of the bodies for this pur-
the graves are pierced with their
very direction; at evening, hun-
hese beetles may be seen in the
ds, either buzzing over recent
emerging from them. The Sex-
is this country seldom finds so
a provision for him, and he is
necessity of taking *much more*
sometimes avails himself of dead

dogs and horses, but these are too great rarities to be his constant resort; the usual objects of his search are dead mice, rats, birds, frogs, and moles; of these a bird is most commonly obtained. In the neighbourhood of towns, every kind of garbage that is thrown out attracts these beetles as soon as it begins to smell, and it is not unusual to see them settling in our streets, enticed by the grateful odour of such substances. The Sexton Beetles hunt in couples, male and female; and where six or eight are found in a large animal, they are almost sure to be males and females, in equal numbers; they hunt by scent only, the chase being mostly performed when no other sense would be very available, viz. in the night. When they have found a bird, great comfort is expressed by the male, who wheels round and round above it, like a vulture over the putrefying carcass of some giant of the forest, — the female settles on it at once, without this testimonial of satisfaction; the male at last settles also, and a savoury and ample meal is made before the great work is begun. After the beetles have appeased the calls of hunger, the bird is abandoned for a while; they both leave it to explore the earth in the neighbourhood, and ascertain whether there is a place suitable for interment: if on a ploughed field there is no difficulty; but if on grass, or among stones, much labour is required to draw it to a more suitable place. The operation of burying is performed almost entirely by the male beetle, the female mostly hiding herself in the body of the bird about to be buried, or sitting quietly upon it, and allowing herself to be buried with it: the male begins by digging a furrow all round the bird, at the distance of about half an inch, turning the earth outside; his head is the only tool used in this operation; it is held sloping outwards, and is exceedingly powerful. After the first furrow is completed, another is made within it, and the earth is thrown into the first furrow; then a third furrow is made, and this is completely under the bird, so that the beetle whilst working at it is out of sight: now, the operation can only be traced by the heaving of the earth, which soon forms a little rampart round the bird: as the earth is moved from beneath, and the surrounding rampart increases in height, the bird sinks. After incessant labour for about three hours the beetle emerges, crawls upon the bird, and takes a survey of his work. If the female is on the bird, she is driven away by the male, who does not choose to be intruded on during the important business. The male beetle then remains for about an hour perfectly still; he then dismounts, dives again into the grave, and pulls the bird down by the feathers for half an hour; its own weight appears to sink it but very little. At last, after two or three hours' more labour, the beetle comes up, again gets on the bird, and again takes a survey, and then drops down as though dead, or fallen suddenly fast asleep. When sufficiently rested, he rouses himself, *treads the bird* firmly into its grave, *pulls it by the feathers* this way and that way, and *having* settled it to his mind, begins to shovel

in the earth; this is done in a very short time, by means of his broad head. He goes behind the rampart of earth, and pushes it into the grave with amazing strength and dexterity; the head being bent directly downward at first, and then the nose elevated with a kind of jerk, which sends the earth forwards. After the grave is thus filled up, the earth is trodden in, and undergoes another keen scrutiny all round, the bird being completely hidden; the beetle then makes a hole in the still loose earth, and having buried the bird and his own bride, next buries himself. The female having laid her eggs in the carcass of the bird, in number proportioned to its size, and the pair having eaten as much of the savoury viand as they please, they make their way out, and fly away." The eggs are quickly hatched, and when the grubs become perfect insects, they make holes in the ground, and come forth.

NECTARINIADÆ. A family of Passerine birds, comprising the Honey-suckers, all of which are foreign. They are distinguished by a beak of medium length, arched, pointed, and compressed; but they neither use the tail, nor climb. Some of the smaller species have a very vivid plumage. They are natives of Africa and Asia for the most part.

NEGRO-FLY. (*Psila rosæ.*) This Hemipterous insect, which is sometimes called the Carrot-fly, in its perfect state is slightly haired, shining black, rather of a metallic green. The head is reddish yellow, antennæ and palpi with black tips. Legs light yellow; balancers white; and wings clear like glass. It is found throughout the summer. The larva lives in the carrot, where it eats passages; it is found particularly near the extremity of the main root. The carrots die off by degrees, as they cannot draw sufficient nourishment from the fibrous roots. When carrots have been attacked by this insect, they lose their sweet taste, and become rusty, so called from the rusty colour assumed by the passages of the maggots. The larva of the Negro-fly is cylindrical, pointed anteriorly, like parchment, shining, smooth, bare, pale yellow; the anal joint is rounded, having posteriorly above two black, rather elevated spiracular plates, the latter having a sharp point at the end. Leaving the carrot, the larva is transformed in the earth into a small light brown, obliquely impressed, little oval mass; the short, roundish head end of which is obliquely truncated, and rather hollowed out above. At the anal end, the two spiracular plates of the larva form two small tail points. The only way to diminish their numbers is to pull up the sickly infested carrots, which are distinguishable by their yellow outer leaves, and early withering; and to destroy the insects contained in them before they change into pupæ.

NEMATURA. A genus of Mollusca belonging to the family Turbinacea. The shell is thin and nearly oval, somewhat compressed from back to front; spire acute, consisting of few rounded whorls, the last being large, but contracted near the aperture; operculum spiral, horny, with few volutions.

NEMEOBIUS. A genus of Diurnal Lepidoptera, which contains one British species, the Nemeobius Lucina; or Duke of Burgundy Butterfly. This small indigenous species is somewhat local in its haunts, though not by any means rare. The upper surface of all the wings is obscure brown, irregularly spotted with fulvous, disposed transversely, the base of the wings being immaculate, and a central black dot being surrounded by an outer row of spots: the anterior

Duke of Burgundy Butterfly (Nemeobius Lucina.)

wings beneath are paler than the upper surface, with two ranges of fuscous spots towards the tip: the posterior wings beneath are deep fulvous, with two rows of white spots, and a marginal striga of black dots; the cilia on both upper and lower surfaces are white, interrupted with fuscous; the antennæ and upper part of the body dusky. The Caterpillar is said to feed on grasses; but neither this nor its chrysalis appears to be well known.

NEOMORPHA. A genus of birds allied to Epimachus, of which the only known species is Neomorpha Goulidi, a native of New Zealand, which, according to Dr. Diefenbach, is confined to the hills near Port Nicholson, whence the feathers of the tail are in great request among the natives, who send them to all parts of the island. The straight and stout-beaked bird is regarded as the male; the slender curved-billed as the female. The natives entice them by a shrill and long-continued whistle. Their food consists of seeds and insects. James Pomare, the New Zealand boy who accompanied Mr. Angus, had a tail of this bird in his hair. The plumage is deep black; the tip of the tail white; the beak horn-coloured; wattle rich orange.

NEPHROPS. A genus of long-tailed Crustacea allied to the lobster, and containing a species (*N. Norvegicus*), occasionally brought to the London markets.

...and a cirrhus above
A great number of species
...
...e *Nereis prolifera*, exhibits,
...arity in its mode of propa-
...y spontaneous division, the
...body being gradually trans-
...dditional animal, the head
...cirrhi being already deve-
...SIBRANCHIATA.]

A genus of Mollusca, family
... found in a fossil state, and
...y any other. It is oblong,
...nists of numerous whorls;
...strong fold on the columella,
...r lip, and one on the inner
... the body whorl.

..., or NERITIDÆ. A family
... of *Trachelipoda*, containing
...icella, Natica, Nerita, and
...hells constituting this family
...nguished by the smallness
...e spire, which appears placed
...e mouth is generally semi-
...alf closed by a flat partition,
...left lip.

... genus of marine Mollusca,
...Eastern and American seas,
..., Moluccas, &c. The shell
...h or ribbed, semiglobose;
...sting of few volutions; aper-
...ircular; inner lip flattened,
...oothed, as well as the outer,
...horny, covered with shelly
...pecies (*Nerita peloronta*) is
...ing Tooth, from the red ap-
...teeth on the inner lip. The
...imal is furnished with two
...a having eyes at the base;
...ere are about thirty species
...ssil.

A genus of fresh-water Mol-

...like the *Dodo*, its skin and bones will be-
come the only mementos of its existence. It
is found among the rocks and upon the
loftiest trees of the island; is easily taken;
and, like the rest of the *Psittacidæ*, bears
captivity remarkably well. In its wild state
it feeds upon the blossoms of the white-wood
tree, or white *Hibiscus*, sucking the honey of
the flowers. A knowledge of this circum-
stance induced Mr. Gould "to examine the
tongue of the bird, which presented a very
peculiar structure, not, like that of the true
honey-feeding Parrakeets (the *Trichoglossi*),
furnished with a brush-like termination, but
with a narrow horny scoop on the under
side, which, together with the extremity of
the tongue, resembled the end of a finger with
the nail beneath instead of above; this pe-
culiarity in the structure of the organ is
doubtless indicative of a corresponding pe-
culiarity in the nature of the food upon
which the bird subsists." The general colour
of the plumage is brown above, the head and
back of the neck tinged with gray; cheeks
yellow, tinged with red; throat and chest
yellow; tail feathers banded at the base with
orange-yellow and brown; rump, belly, and
under tail-coverts deep red: bill and feet
dark olive-brown.

Notwithstanding what we have stated
above, on the authority of Mr. Gould, as to
the habitat of this bird being confined to
Philip Island, we believe that the *Kaka* of
New Zealand, described by the Rev. W. Yate,
is the identical species. He says, "This bird
feeds upon all kinds of fruit, berries, and
farinaceous roots. It bites holes in trees, in
which it makes its nest; laying four, and
sometimes five, eggs, perfectly white. Gene-
rally, three of these birds are found together
in the same hole, one male and two females;
and during the season of incubation, the
nests, though separated, are so close together,
that either of the mother-birds can sit upon

Nettapus has the head brownish-green, indistinctly barred with light brown; beneath the eye an oval spot of white; neck, back, and wings, deep glossy green; primaries black; outer webs of the secondaries snow white; feathers of the chest, sides, and back of the neck white, with a number of greenish black circles one within the other, so numerous that the white is nearly lost; flanks similarly marked, but bolder; tail black, glossed with green; abdomen white; under tail-coverts black; bill dark greenish gray; legs and feet blackish brown. The female differs from the male in being destitute of the white spot beneath the eye; in having the crown, occiput, and a stripe down the back of the neck dark brown; in having the chin and upper part of the throat white, speckled with brown. Mr. Gould, to whose 'Birds of Australia' we are indebted for the description, says that it is an extremely shy species, and at the slightest movement of anything near it, dives and remains under water a long time. His specimens were shot at Port Essington.

NETTLE [BUTTERFLY]. A name given by collectors to Butterflies of the species *Vanessa urticæ*.

NETTLETAP [MOTHS]. A name given by collectors to Moths of the genus *Simæthis*.

NEUROPTERA. [Dragon-flies, Lace-winged Flies; May-flies, Ant-lion, Day-fly, White Ants, &c.] One of the Orders into which the class *Insecta* is divided. The *Neuroptera* are distinguished by having four wings, each pair being membranous and transparent; the nervures forming a very beautiful and minute network, subdividing and uniting again, so as to divide the whole surface into a great number of minute cells. The antennæ are in general setaceous; the mouth is usually furnished with mandibles and maxillæ; and the abdomen is unprovided with a sting. The larvæ have six legs, and are very active. Some insects of this order merely pass through a semi-metamorphosis; others a complete one. Although the posterior wings are usually as large as the anterior, they are occasionally much smaller, and may even be altogether wanting. The Dragon-fly and May-fly are familiar examples of this order. — The White Ants, Wood-lice, and Wood-ticks (*Termitidæ* and *Psocidæ*), the latter including also the *Anobium* or Death-watch, are almost the only noxious insects in this order, and even these do not injure living plants. The Dragon-flies (*Libellulidæ*) prey upon gnats and mosquitos; and their larvæ and pupæ, as well as those of the Day-flies (*Ephemeridæ*), and those of some of the May-flies, called Caddis-worms (*Phryganeidæ*), all of which live in the water, devour aquatic insects. The predaceous habits of the Ant-lion are so well-known as to be almost proverbial. The Lace-winged flies (*Hemerobiidæ*), in the larva state, live wholly on plant-lice, great numbers of which they destroy; and the Scorpion-flies (*Panorpidæ*) are also predaceous insects. The particular history of several of the more interesting members of this class is given in separate articles under some of the above names.

NEWFOUNDLAND DOG. This noble species of the canine race is justly entitled to the peculiar regard of man. For faithful attachment to his master, great strength, sagacity, and perseverance; for good temper, patience, and quiet fondness to all who belong to the household; as well as for being the fearless protector of whatever may be entrusted to his vigilant care, the genuine Newfoundland Dog has no superior. In its

NEWFOUNDLAND DOG.

native country he serves to convey light loads of wood or provision, on sledges, over many a rugged track; nor is he a contemptible assistant to the aquatic sportsman, either there or here, in rescuing his birds from the water. With so many excellent qualities, we may well excuse him if he sometimes shows impatience of restraint at being kept chained up, or if, apparently unprovoked, he should bite the hand that has been accustomed to caress him. There are several varieties of the Newfoundland species, differing in size, and in the character and colour of the fur. In general the muzzle is broad, the head robed, and the carriage majestic; the colour is black and white, the latter generally predominating; the hair waved or curly; the tail thick, bushy, and the end of it curled upwards. There is also a smaller kind, at present very common, not much larger than a Water Spaniel; the hair of which is almost wholly black, and whose general appearance is much less noble than the one we have described.

NEWT. There are several species of these small reptiles, the greater part of them aquatic. The principal one is called the Great Water-Newt (*Triton palustris*). When full grown this species measures about six inches in length, and is greatly allied to the Salamander in its general appearance. Its colour on the upper parts is an extremely dark brown; the sides being marked with numerous small whitish specks; and the under parts are of a bright orange-colour, variegated with large and irregular patches of black. The tail is of a flattened form, with thin edges, and pointed at the extremity; on each side the tail, in the male, is a silvery-white broad band or stripe, tinged with blue. The eyes are of a bright gold-colour; the head rather small; the limbs short; the five-toed divided into four, and the hind toes five toes, all destitute of

fications of the blood-vessels dis-
rough it; but if examined by the
e, it shows, in the most distinct
tiful manner, the rapid circulation
od, the particles of which, in this
well as in the rest of the Amphi-
f an oval form, not round, as in
malia. The general colour is not
rent from that of the preceding;
however, sometimes in the course
ne day, according to the tempera-
e weather, &c. The Water-Newt
the early part of the spring, depo-
all clusters of spawn, from which
atched the larvæ or young, which,
derable period, are furnished with
pair of ramified branchial fins or
on each side the neck. These
er having served their temporary
of assisting the respiration of the
uring its growing state, are gra-
diberated. The Water-Newts fre-
ast their skins; and are remark-
high degree of reproductive power.

ER. A name given by the Cornish
to a species of *Holothuria*. It is
s also called "Cotton Spinner."
OTHURIA.] The word *Nigger* is also
ame for the larva of the Saw-fly,
e) so destructive to the turnip crop.

T-HAWK. (*Chordeiles Virginia-*
is beautiful Passerine bird, belong-
e family *Caprimulgidæ*, is eight
d a half long, the expanded wings
nty inches. It appears in Jamaica
beginning of April, and is sup-
Mr. P. H. Gosse to winter in
America. This gentleman informs
s, in his valuable and interesting
titled 'The Birds of Jamaica,' that
ers and voice of this species are so
s to force themselves upon our at-

to and fro. Their cries were uttered in rapid succession, and resounded from all parts of the air, though it was too dark to distinguish even such as were apparently in near proximity. Now and again, the hollow booming sound, like blowing into the bunghole of a barrel, produced at the moment of perpendicular descent, as described by Wilson, fell on my ear."

Whither the Piramidig retires after its twilight evolutions are performed, or where it dwells by day, Mr. Gosse says he has little evidence. He remarks that "these birds are usually solitary, except inasmuch that several hawking over the same circumscribed region, must often come into close proximity; but this seems, in general, neither sought nor avoided; each swoops on its own course, regardless of its momentary neighbour. Yet the tender passion sets aside even the most recluse solitariness in any animal; and to this I attribute it that now and then I have seen one Pirimadig following another in close and pertinacious pursuit, ever and anon uttering its singular cry, and evidently desiring to come into contact with, but not to strike or hurt its coy companion. I would not assert from hence that the nuptials of this species are performed upon the wing, because the premises are too slight to decide so important a fact; but it is known that it is so with the European Swift, a bird whose manners greatly resemble those of our Night Hawk."

In some parts of Jamaica this bird bears the appellation of "Turtle-dove;" but more often, and with more propriety, that of "Mosquito-hawk." In one which Mr. Gosse shot in its evening career, and afterwards dissected, the stomach was stuffed with an amazing number of insects, consisting chiefly of small beetles of the genus *Bostrichus*, of which alone there were about two hundred.

It is about six inches in length: the upper part of its body is of a rusty brown, tinged with olive; the under parts pale ash-colour, almost white at the throat and belly: the bill is brown, yellow on the edges at the base; eyes hazel; legs pale brown. It is

NIGHTINGALE.—(PHILOMELA LUSCINIA.)

common in the southern counties of England, but never visits the northern parts of the island, and is but seldom seen so far west as Devon and Cornwall. Montague informs us that it is said to be found only as far north as Yorkshire, and certainly not farther west than the eastern borders of Devonshire; although they are plentiful both in Somersetshire and Dorsetshire. "Why (he adds) they should not be found in all the wooded parts of Devonshire and Cornwall, which appear equally calculated for their residence, both from the mildness of the air and variety of ground, is beyond the naturalist's penetration. The bounds prescribed to all animals, and even plants, is a curious and important fact in the great works of nature. It has been observed, that the Nightingale may possibly not be found in any part but where cowslips grow plentifully; certainly, with respect to Devon and Cornwall this coincidence is just." It is a bird of passage, appearing in this country, and the rest of Europe, about the beginning of April, and returning, as it is supposed, to the distant regions of Asia, by the end of the summer. They neither appear to winter on the European continent, nor to stay in Africa; but are at all times seen in India, Persia, China, and Japan, where they are even more esteemed for their song, and sell for higher prices, than here.

Mr. Gould (in his 'Birds of Europe') remarks that the Nightingale appears to be confined to particular districts; remarking that Devonshire appears to be its limit westward, and Doncaster in Yorkshire in a northern direction, few if any authenticated instances being on record of its occurrence beyond that town, which is the more singular as Nightingales are common in Sweden and other countries situated farther north than England. "Our own observation," continues Mr. Gould, "respecting the migrations of the Nightingale, is, that after leaving our island it proceeds to the opposite shores of the Continent, and gradually makes its way southward, until it arrives in Africa, which is its ultimate resting-place during our winter months. We have ourselves received specimens k northern districts of Africa, b obtained any from the centra parts of that portion of the gl appear, therefore, that its dis that vast continent is comparat In no part of Europe is it m than in Spain and Italy; f however, equally as from ou gularly migrates on the appro

These birds are solitary in never associating in flocks, lik smaller birds. They make th lower part of a thick bush or h is well sheltered and secure; a lays four or five eggs, of a gr colour. The nest is composed moss, and leaves, and lined wi and other soft substances. W ness of incubation is performed her mate, at no great distan her with his delightful melo however, as the young are hatc off singing, and joins her in th viding for them. A second an third hatch takes place; and in they are said to have four. Th Nightingale is soft, various, and frequently pausing, but more the warbling of any other bird because it is heard at a time rest are silent — when every mei is heard to advantage, and ha effect on the imagination. Its principally of insects, small w ants, and sometimes berries of v

It has been frequently remar Nightingale is not only famou moderns for its singing, but a one of the ancients who unde scribe the beauties of nature, ha to raise its reputation. "The N says Pliny," that for fifteen day hid in the thickest shades, m note without intermission, des tention and wonder. How su so great a voice can reside in body! such perseverance in s animal! With what a musi are the sounds it produces modu note at one time drawn out breath, now stealing off into a dence, now interrupted by a changing into a new note by an transition; now seeming to re strain, then deceiving expecta sometimes seems to murmur wi full, deep, sharp, swift, drawling now at the top, the middle, and of the scale! In short, in th seems to reside all the melody has vainly laboured to bring fo of musical instruments. Some to be possessed of a different s rest, and contend with each oth ardour. The bird overcome i only to discontinue its song w From Pliny's description, we s to believe this bird possessed of a strain; but, though it is in fact Nightingale in Italy, yet in o England the little songstress is so liberal of her music. It is

ıld gravely relate a long
g this bird's oratorical talents,
he conversation which a friend
etween two of them while pass-
e night at an inn in Ratisbon,
o much for human credibility,
o much for human patience.
le with a passage from Sturm :
sten to the brilliant sounds of
s are apt to conclude that the
large, that the throat must
trength ; and the inimitable
melodious notes makes us pre-
asses all others in the beauty
But it would be to no purpose
dvantages in the Nightingale :
poor appearance, whose colour,
whole of its exterior, is void
ttractive or majestic. Nature
compensated for its plainness,
a voice irresistibly charming.
ne long quivering notes : what
ness, and brilliancy in them !
gins her song, she seems to
mpose beforehand the melo-
he wishes to be heard. She
: then the notes swell gra-
ey run with the rapidity of a
goes from serious to gay, from
o the wildest warblings ; from
rns and shakes to languishing
ss, throughout the whole, the
the nicest ear. This bird may
many useful and edifying re-
example, we learn this truth
homeliness of body is some-
with very estimable qualities,
exclude beauty from the soul.
r the skilful harmony of the
does it not naturally lead us
or, from whom she has this
at wisdom must there be in the
this bird, to make it capable of
ace to such sounds ! Lungs so

the animals are diminished or annihilated in any way : hence the curling of the waves, and their ripple on the shore, the movement of a boat, or the stroke of the oars, is marked by lines of increased brilliancy. Nay, if the hands be dipped in the water thus phosphorescent, and then rubbed together, they will be covered with luminous spots, occasioned by these delicately-formed little animals, the bodies of which are often so transparent, that they can scarcely be distinguished from the water, except when displaying their phosphorescence. When we consider that the whole surface of the ocean, as far as the eye can reach, is sometimes seen to exhibit a uniform luminosity, and it is ascertained to be due to these otherwise almost invisible atoms, the vast amount of organic life that ordinarily escapes our notice must strike the most inattentive observer of the works of Nature with astonishment and admiration.

NOCTUIDÆ. An extensive family of Lepidopterous insects, corresponding with the Linnæan section *Phalæna Noctua*. The body is robust, and clothed with scales ; the antennæ almost always simple, or but rarely pectinated or ciliated in the males ; the thorax stout, and often crested ; and the mouth well developed, the maxillæ being greatly elongated. The wings are of moderate size, with strong nervures, and ear-shaped spots on the disc of the anterior pair ; and when in repose the wings are ordinarily deflexed at the sides of the body. The larvæ, for the most part, are naked, with sixteen feet ; and they in general undergo their transformations underground in cocoons, often formed of particles of earth mixed in with the silk. The typical groups of this family, as their name imports, fly only by night, and repose during the day in the crevices of the bark of trees, old walls, palings, &c. ; there are others,

situation.

NOTONECTA : NOTONECTIDÆ. A genus and family of aquatic insects. [See BOAT-FLY.]

NOTOXIDÆ. A family of Coleopterous insects, of small extent, and composed of species minute in size. The majority of them are found upon the ground, and at the roots of grass in sandy situations ; some frequent flowers, and others evidently prefer the neigbourhood of decayed vegetable matter. They are active in their motions, and fly well. In the genus *Notoxus* the front of the thorax is produced into a long horn extending over the head.

NUCIFRAGA. A genus of birds. [See NUTCRACKER.]

NUCULA. A genus of Conchifera, found in the Baltic and Mediterranean, the Indian seas, the English Channel, &c. These shells are small, and vary in shape, but are generally pearly inside ; they are equivalve, inequilateral, and covered with a green or dark brown epidermis ; hinge linear ; bosses contiguous and curved ; teeth small, numerous, and prominent, with a large one in the middle ; muscular impressions two, simple. The row of teeth on each side of the umbones, and the ligamentary pit in the centre of the hinge, are the distinguishing characteristics of this genus. Foot of the animal, large but thin. They are chiefly found on the sand and mud, either on the open coast or at the mouth of rivers. The species are both recent and fossil.

NUDIBRANCHIATA. A numerous Order of marine molluscous animals, which, being adapted to breathe water at any depths, are often found at a great distance from land. The work of Messrs. Alder and Hancock on the British Nudibranchiates, published by the Ray Society, gives figures and descriptions of all the species, beautifully drawn from the life. [See DORIS.]

NUMENIUS. A genus of Grallatorial

NUMMULINA DISCOIDA

some places accumulated in suc as to form entire mountain many buildings have been c limestone crowded with them mids of Egypt, for example, stone composed of the *Numm alis*, and perhaps other species.

NUTCRACKER. (*Nucifra tastes.*) An Insessorial bird, res manners and habits both the Woodpecker. It is about the s daw ; its wings, when closed, m seven inches. The nostrils are whitish feathers, which point f plumage of the head, neck, a a dark brown hue, a little incl and the feathers on the lowe head and neck have each a tria spot at their tips ; the wings a triangular white spots on the b the tail is composed of black fe with white ; and the legs, fe are black. It feeds on nuts, insects ; climbing the trees and bark with its bill to get at the b It lays five or six yellowish-wh

NUTHATCH. (*Sitta Europ* sorial bird which frequents wo the Woodpecker, moves up a trunks of trees with great facili food. It is near six inches in strong ; black above, beneath and the eyes hazel. A black over each eye, from the bill, ex the side of the neck ; all the the body is a fine blue gray belly of a pale orange, sides

...ches of trees; but the tail, which is ...l rounded, is of no assistance to the ...its progress. Unlike the Wood-...ewever, the Nuthatch runs with the ...wnwards as well as upwards, and ...s former position of the head ap-... be the favourite one; it generally ...a branch with the head in a down-

...THATCH.—(SITTA EUROPÆA.)

...dition, and sleeps in that posture. ...hatch feeds on caterpillars, beetles, ...ous kinds of insects: it also eats ... which it lays up considerable ...the holes of trees. Its mode of ...the nut in a chink, perforating the ...l extracting the kernel, is as inge-...it is amusing to witness: when dis-...its work, it very readily removes ...and flies away with it. These birds ...d in all cold and temperate climates. ...urage and perseverance of the Nut-...hen made captive, are notorious. ...ated in the Magazine of Natural ... that one of these birds had been ...y a sportsman, and was put into a ...ge made of oak and wire. During ...nd day, the period of his confine-...s tapping labour was incessant, and ...nd of that time the wood-work of ...n was pierced and worn like worm-...ber. His impatience of his situa-...s excessive; his efforts to escape ...ceasing, and displayed a degree of ...ntelligence perfectly surprising. He ...e and fearlessly familiar, and vo-...r devoured the food placed before ...is hammering is described as having ...cuisely laborious, for he did not ... other birds do, but taking a firm ...th his great feet, he turned upon ... upon a pivot, striking with his ...eight, and thus assuming with his ...e appearance of the head of a ... in motion. But all his energy was ...; his liberation was beyond his own ...e effect; and the unfortunate bird ...at the close of the second day under ...bined effects of his vexation and ...

WEEVIL. [See WEEVIL.]

...IBIUS. A genus of birds belonging ...prionalpidæ family.

...ICORAX. A genus of the Heron ...taining the NIGHT HERONS. [See

NYLGHAU, or WHITE-FOOTED ANTELOPE. (*Antilope* [*Portax*] *picta*.) This animal, which inhabits various parts of India, is one of the largest and finest Antelopes known. Its face is long and narrow; its horns are black, round, pointed, and slightly curved forwards, though only about seven inches long; the ears broad and fringed with white hairs; the neck deep and compressed: along the top of the neck runs a slight mane of black hair, which is continued to some distance down the back; and on the breast is a long hanging tuft of a similar colour. The general colour of the Nylghau is a fine dark gray or slaty blue on the upper parts, and white underneath. The female resembles the male in general appearance, but is considerably smaller, of a pale brown colour, and has no horns. There is a large white

NYLGHAU.—(ANTILOPE [PORTAX] PICTA.)

spot on the throat, and a smaller one on each cheek; and the pastern joints are marked in front with one, and behind with two white spots or bars. The native haunts of this powerful animal are the dense forests of India. It is said that in the days of Aurengzebe they abounded between Delhi and Lahore, and formed one of the objects of the chase with that mighty monarch during his journey to Cashmire; his army of hunters inclosing them within a limited space by means of nets. The king and his omrahs, attended by their huntsmen, then entered, and, somewhat after the manner of a modern *battu*, dispatched them with their arrows, spears, &c.

NYMPHALIDÆ. The third family of *Lepidoptera*. They are distinguished by the rudimental structure of the fore legs, which are thickly covered with hair; the labial palpi are proportionably longer; the wings more robust; the posterior grooved to receive the abdomen; and the discoidal cell either open, or closed by a slender nerve. The caterpillars are variable in form; and the chrysalis is simply suspended by the tail. Among the species belonging to this family are many of the most beautifully varied in their markings and colours. The well-known species bearing the English names of the Peacock, Painted Lady, Camberwell Beauty,

and Red Admiral, are included in it; also the Fritillaries (so called from the spotted flower of that name), the under side of whose wings is delicately ornamented with pearl or silvery spots. Others, belonging to the genus *Morpho*, which comprises also some of the largest known Butterflies, have the upper surface of the wings adorned with the most splendid silvery blue; while others, as the males of *Apatura Iris*, or Purple Emperor, present the eye with a changeable gloss of intense purple. The numerous species forming the genus *Hipparchia* are of feeble construction in the imago state, and cannot bear comparison with those before mentioned, which are the most robust and active of lepidopterous insects. The species of this family are extremely liable to sport into varieties, which is especially the case with the *Hipparchiæ*; the caterpillars of which, it is to be observed, confine themselves to the different grasses, and feed only in the night. The caterpillars of *Vanessa* are armed with long and rough spines, arranged in transverse whorls upon the segments, except the first. Those of the *Fritillaries* are similarly armed, but have two long spines on the neck.

NYROCA. A genus of Ducks, containing the POCHARD (*N. ferina*), and CANVAS-BACKED DUCK (*N. valisneria*). [See DUCK and POCHARD.]

OCELOT. (*Felis pardalis.*) An animal of the feline tribe, less than the Ounce, but its skin is more beautifully variegated. The ground colour of the male is a bright reddish tawny above, and nearly white on the lower part of the sides, breast, limbs, and belly. Several large, long, broad stripes, of a deeper

OCELOT.—(FELIS PARDALIS.)

tinge, and edged with black, are variously disposed over the upper parts of the body; the head is streaked and spotted with black, and the limbs and belly are beautifully marked with numerous small round spots; the tail is spotted or marked with patches also. The colours of the female are less vivid, and more inclining to ash-colour. The Ocelot inhabits the hotter parts of South America; is extremely ferocious; and preys upon various kinds of game.

OCTOCERA. The first family of the order *Cryptodibranchiata* of Blainville, in the class Mollusca, containing the genus Octopus,—a species of which being found in the Argonauta, or Paper Sailor, has to the long-continued controversy ther it is really the constructor of whether it is a mere pirate, wh destroyed the true animal of the has possessed itself of the habitat

OCTODON. A genus of sm Mammalia, inhabiting Chili. large ears, and a long and tuft are somewhat allied to the group. The only known species *don Degus*, which is often seen the branches of low underwood. shape this species generally res Water Rat, with which, indeed, to be connected systematically, animals," Mr. Bennett observes, the ground, but always under fences or low thickets. They ar dant in the neighbourhood of that in the high road between and St. Jago more than a hundre quently be seen at one time food. Sometimes, but not often observed on the lower branches of and on those which form the fen fly at the least alarm, and in ra their tufted tails like a bent bow," nett adds that two living specime by Mr. Cuming from Chili, were him, in 1831, in the menagerie o logical Society: one of them ca the other was alive when Mr. B. v 1835), and was as active and livel on its first arrival. They were and not very playful. They leap and without any exertion, from their cage to a narrow perch pla height of nearly a foot, and there seated at their ease. They lived table food.

OCTOPODA. The name of a t branchiate Cephalopods, with eig tentacular appendages.

OCTOPUS. The common Octopu is the *Polypus* of ancient naturalis eight arms, each of which is six length of its body, and furnished pairs of suckers. Every sucker is of a circular adhesive disc, which h fleshy circumference, and presents of lines radiating towards the circu of an inner cavity. In this cavity i able circular piston, which in its forms an air-pump of the most p beautiful construction. When a fo Unfolded within the tenacious gr arms, resistance is vain; for with city do the suckers adhere, that the sooner wrenched off than unfixed. these *Octopi* measure four feet bet ends of the arms; and it is said t larger ones are sometimes met w warmer regions of the globe. It justly remarked that "there is strange and uncouth in the aspe creature; its long flexible arms sn curling in all directions; and its l which stare with fixed gaze, rea really repulsive."

Mr. Adams, in his Natural Hist

I. M. S. Samarang, ous size, are ceas- g the islands of the measured one, which on their shoulders nd each brachium ed long, giving the xploring a space of out moving, taking point, and the ends hery." "On moon- ese Islands, I have *Sepiæ* and *Octopi* in and have had con- iffculty in securing restless vivacity at ns their endeavours rom side to side of ves so tenaciously to s, by means of their at it requires great letach them. Even own upon the sand, a sidelong shuffling it their long arms, luid in sudden vio- out with their big, night appear lumi- very grotesque and

us of Brachyurous the sea-shores of hemispheres. They the rapidity of their ave observed these

ND CRAB. NDARIE.)

aunts declaring that an can hardly over- holes for themselves r above the level of in these they reside they pass the winter . There are several le from each other: *ippoda arenaria*, or at two inches; colour r their general time o seek their food is the end of October ecrusie in the earth; nd a suitable place, at which they had f the sea, enter it, e so thoroughly that There they remain hrings them forth, in teaches them to sidences.

ŒDEMERIDÆ. A family of Coleopterous insects, of a moderate size, and generally of lively colours. In the perfect state they frequent flowers and hedges: they fly with agility, but walk slow: they are, however, enabled to retain firm hold upon the leaves and stems of plants, by means of their dilated tarsi. The body is long and narrow, with the elytra broader than the head and thorax; the antennæ moderately long and filiform; the head elongated in front, and inserted deeply in the thorax, without any distinct neck.

ŒDICNEMUS. A genus of Grallatorial birds, having the tip of the bill inflated both above and beneath; the groove of the nostrils half the length of the beak; legs reticulated, with a short membrane at the base of the three toes. Mr. Gould, in his 'Birds of Europe,' considers the genus as connecting the Bustards and Plovers, and observes that while the normal or typical groups are abundant in species, the aberrant forms, which appear to be created for the purpose of filling up the intervening chasms, are restricted for the most part to a limited number of species: thus, while the Bustards and Plovers comprise a vast multitude of species, the genus *Œdicnemus* contains at most but five or six, and these confined entirely to the Eastern hemisphere. Their English name is derived from the usual habitat being arid and stony districts, where they pick up slugs and insects. [See STONE CURLEW.]

ŒSTRUS. A family of Dipterous insects, or flies, whose larvæ are known by the name of *bots*. The perfect insects resemble large meat-flies in form, are very hairy, and have these hairs coloured in rings, like Humble-bees; but the duration of their lives is so short in this condition that they are seldom seen. They deposit their eggs on the body of various herbivorous quadrupeds; each species almost invariably confining its attacks to a certain species of animal. The egg is, in some cases, deposited by the parent in situations where the larva may burrow into the flesh, where it finds its nutriment in the inflammatory tumours it occasions. In other instances, the eggs or larvæ, deposited upon spots which the animal is in the habit of licking, are taken up by the tongue, conveyed to the mouth, and thus pass into the stomach. And the species which inhabits the Sheep, are found in the frontal sinuses of the skull. Hence they are called *cutaneous*, *gastric*, or *cervical*, according to the locality in which they are bred. When full grown they quit the body, and fall to the ground; beneath the surface of which they undergo their transformations. [See GADFLY.]

ŒTHRA. The name of a genus of *Crustacea* whose general organization nearly approaches that of the Crabs. They are from two to three inches in length, and the whole surface of the body is extremely rugged. The species *Œthra scruposa* is a native of the Indian Archipelago.

OIDEMIA. A genus of Wading Birds, containing the Scoter Duck and others. [See DUCK: SCOTER.]

Geodart, Frisch, and De Geer, have well described the perfect insect, and have even given detailed observations on the oviposition of the female and the early stage of the larva, but they have invariably failed to carry their inquiries further, and have been quite unacquainted with the adult larva and the nymph, as well as with the early stage of the imago. This deficiency in our knowledge of the history of these common insects is to be attributed principally to the anomalous habits of the insect in its earliest stages, and to the little credit that has been given to the statements of former observers.

Mr. Newport commenced his observations on the habits of *Meloë* about fifteen years ago; but although he succeeded at that time in rearing the larva from the egg, as had been done by Geodart and De Geer, and soon afterwards obtained the full-grown larva, the nymph, and the imago, before it left its cell, he has never been able to obtain the larva in a stage intermediate between its earliest and its full-grown condition. The species on which Mr. Newport made his investigations are *Meloë violaceus*, *Meloë proscarabæus*, and *Meloë cicatricosus*, all which he procured at Richborough, near Sandwich, in Kent. The first two of these species come forth about the middle of March, and the latter from ten days to a fortnight later in the season. They feed chiefly on the buttercup (*Ranunculus acris*), and one species, *M. cicatricosus*, also on the dandelion.

When the *Meloës* first appear they are feeble, and have the body very small and contracted. In the course of a few days they become more active and are increased in size. They expose themselves much to the sun, and pair in the middle and warmest part of the day. On the 8th of April, 1839, the author first observed a female preparing to deposit her eggs, and he has since had numerous opportunities of observing her thus occupied. She excavates a burrow, to the depth of about two inches, beneath the roots of grass, in a dry soil exposed to the sun, usually at the side of a foot-path. Into

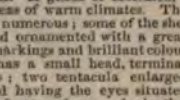
to them, that the insects a
move it from their bodies,
several experiments. Th
the observations of Geod
who first bred the larva fr
by *Meloë*. The structure o
described, and compared
Pediculus apis of Linnæus
menopterous insects, and t
to be identical in every
Meloë larva is also compar
culus Melittæ of Mr. Kirby
it agrees exactly in form a
ture, but differs in colour,
insect being always black
of *Meloë* is yellow. From
the author concludes that
is the larva of another g
family.

The habits of the larva
investigated, and the effec
by exposure to light are v
When light was totally ex
remained perfectly quiet
but the instant light was a
in motion, travelling rapi
towards it. The experime
enclosing larvæ in a phia
verted and turned in op
When the phial was placed
they invariably ascended
when placed in a horizont
always ran to that end w
the light, even when the
which they had been lyin
allow of their escape.
light Mr. Newport concei
which induces them to a
flowers of the dandelion a
paratory to their attachi
bees that alight on the
pollen, and which then carr
nests. This seems to be t
attacking the bees, to be c
where they are to reside
subsist on the food stored
larva, and not to prey on t
The full-grown larva of

larva are reduced to six short
he insect is then very fat, in-
of an orange-yellow colour,
f spiracles, and greatly resem-
grown Hymenopterous larva.
t a short time in this condition
nges to a nymph, and soon
an imago, in which form it
ter in a state of hybernation,
th in the spring.
e of this paper, while detailing
of light on the larva of Meloe,
stated that he had been led by
her facts, which showed the
e of light on the instincts of
mal, "to regard light as the
e of all vital and instinctive
grees and variations of which
, be referred to modifications
ce on the special organization
d body." This view had sug-
o him in connection with the
ntly made by Mr. Faraday of
of light with magnetism and
d the close relation previously
itessed to exist between elec-
rous power, on which not only
ctions, but also the instinctive
n to depend.
paper, read on the 19th of
, in which this subject is re-
Newport, he entered on an ex-
the habits of the entire group
d to Meloe, and showed that
hem in their larva state bear a
blance to the larva Meloe, not
organization, but also in their
hat the more closely the larvæ
mers approach in structure, the
lso are they allied in instinct
. This accordance between
instinct he regards as universal
nature, and as particularly
e *Articulata*: and he believes
fully comparing our observa-
natural history of animals with
ities of structure, and these on
od with their instincts, what
ne remain useless and isolated
rendered truly important to
data on which a correct know-
ws of creation and life may be
In this way, he states, "na-
may be made to occupy its
n as an important branch of
edge, and mainly help to de-
connection which subsists be-
rs and function, and function
ts of animals." In pursuing
showed that the organization
f the larva *Meloe* closely agree.
nt of birth, when the larva is
tush itself parasitically to the
which alight on flowers to
, and which are to convey it to
organs of vision are largely
d those of locomotion are elon-
ed, and constructed like those
the *Anoplura*; and it is ex-
e and sensitive of light. But
period of full growth, it is found
Metliopliora, it is a fattened,
ed, almost motionless larva,
with its legs atrophied and reduced to mere pedal tubercles previous to a further change in their structure when the larva passes to the state of nymph.

It was further observed, that the limbs of this beetle, although strong, are unguiculated, like those of the *Anoplura*, and fitted for clinging rather than for regular progression; and its mandibles, retaining the jointed pediform structure of the corresponding organs in the carnivorous *Chilopoda*, are fitted for piercing soft structures, rather than for triturating or for incising their food. This fact, overlooked by the author in his former memoir, now induced him to believe that the young *Meloë* pierces and preys on the bee larva rather than that it subsists on its food.

OLIVA. A genus of Mollusca, common in the seas of warm climates. The species are very numerous; some of the shells being large, and ornamented with a great variety of rich markings and brilliant colours. The animal has a small head, terminated by a proboscis; two tentacula enlarged at the base, and having the eyes situated in the middle; foot very large, as is also the mantle. The shell is oblong, cylindrical, smooth, and shining; spire short, with sutures distinctly grooved; aperture narrow and long, and notched at both extremities; outer lip generally thick; columella obliquely striated; operculum horny and small in some species, in others not existing. They are brought principally from Asia, but some are also met with on the coasts of Africa and America.



OLIVA SPICULA.

ONCHIDIUM. A genus of Mollusca, belonging to the *Aquatic Pulmonea* (a class remarkable for their coming frequently to the surface to breathe, and which in consequence can only inhabit waters of inconsiderable depth). The *Onchidium* has a large fleshy buckler-shaped mantle, which overlaps the foot on every side, and even covers the head when this is contracted. It has two long retractile tentacula, and over the mouth a veil, sinuated, or formed of two triangular compressed lobes. The anus and air-passage are under the hinder margin of the mantle, where, a little deeper, is also the pulmonary sac. Destitute of jaws, they have a muscular gizzard, succeeded by two membranous stomachs. Several species inhabit the coasts of the sea, but always in such a situation that they are uncovered at ebb tide, when they obtain the air necessary to respiration.

We have the following account of a species of *Onchidium* in Mr. Arthur Adams's 'Notes on the Natural History of the Countries visited during the Voyage of H. M. S. Samarang:' "Among molluscous animals, the Onchidium of Singapore offers a curious in-

stance of what may be termed an Arboreal Slug. It is a limaciform animal, which is found crawling among the foliage of the trees in the woods, and appearing more particularly after heavy showers. During the heat of the day it collapses its broad, flattened body, and retires under the shade of large leaves, where it remains apparently in a half torpid condition. It leaves no shiny trail behind, when it crawls, as the limax and snail do. It is of a chestnut brown colour, minutely tuberculated, with numerous small, dark, scattered spots, and with the raised middle line of a pale brown; the eyes are terminal on the long superior pair of tentacles."

ONISCIA. A genus of Mollusca, littoral in its habits, and occupying an oblong, subovate, and slightly turbinated shell; spire short, base rather pointed; aperture elongated, terminating anteriorly in a short, scarcely recurved canal; outer lip thickened, denticulated within; inner lip expanded and granulated; outside ribbed.

ONISCIDÆ. There are several species of Crustacea, of the order *Isopoda*, thus designated, some of which are terrestrial, and some aquatic. The type of the group, *Ligia oceanica*, is about an inch long, of a gray

GRANULATED HOG-LOUSE.
(PORCELLIO GRANULATUS.)

colour, with two large yellow patches on the back. It is very common on the coast, clinging to the rocks and to the parapets of maritime erections. When it is attempted to be seized it immediately folds up its legs, and drops.—The *terrestrial Oniscus* frequents dark and concealed places, such as cellars, caves, holes in walls, under stones, &c. They feed upon decaying vegetables and animal matter, and only come forth from their retreat in wet and moist weather. They are popularly known by the name of Wood-lice and Slaters.

ONTHOPHAGUS. A genus of Lamellicorn Beetles living amongst dung. There are very many species.

ONYCHORHYNCUS, or KING TODY. [See TODY.]

OPAH, or KING-FISH. (*Lampris luna.*) This large and beautiful fish, though a native of the Eastern seas, has sometimes, though very rarely, been met with on our own coasts. It is about four feet and a half in length, and weighs from 140 to 150 lbs.; the body is of an oval form; the mouth small, without teeth; tongue thick, with rough papillæ pointing backwards. The dorsal, pectoral, and ventral fins very long, and falciform; and the shape of the tail lunate. The colours of the Opah are particularly rich and showy; the back and sides are green, reflecting both purple and gold in different lights, and passing into yellowish green below. Above and beneath

OPAH, OR KING-FISH.—(LAMPRIS LUNA.)

the lateral line are numerous round, yellowish-white spots; and all the fins are bright vermillion. This fish is held sacred by the Japanese, who regard it as the peculiar emblem of happiness.

OPEN-BILL. (*Anastomus.*) A genus of Wading Birds, allied to the Storks and Jabirus. The mandibles of their beak come in contact only at the base and tips, leaving a wide interval between their edges, at the medial portion; the fibres of the horny substance of the bill in this part appearing as if worn away. One species (*Anastomus oscitans*) is whitish, with black tail-feathers;

PONDICHERRY OPEN-BILL.
(ANASTOMUS PONDICERIANUS.)

another (*A. lamelligerus*) is of a shining black, and remarkable for the stars of each of its feathers terminating in a narrow horny disc, which passes beyond the vane. They are natives of India.

OPHISAURUS. A snake met with in the Southern United States; about eighteen inches in length, and of a yellowish green colour, with black spots on the upper part; the head is very small, and the tail is longer than the body. So great is its fragility, that, according to Catesby, a small blow with a stick will cause the body to separate, not

uck, but at two or three
ssies being articulated
er, quite through to the
his reptile has obtained
ss *Snake*.

name given to an order
includes the Serpent
belonging to this order
grouped in three sec-
s Snakes;—2. Venom-
ier Snakes. The Harm-
ided into two families,
ne *Boidæ*: many of them
d possessed of enormous
The Section of Venom-
tains two families,—the
le-snakes, and the *Vi-*
The Water Snakes belong
ider, and are character-
sed form of their bodies,
d flattening of the tail,
s to swim with facility.
AKES: BOA CONSTRIC-
KE: VIPER, &c.

here are three or four
g this name; all small
me, called the BEARDED
eight or ten inches in
long bifid cirri or bar-
hin. It is found in the
end is in great plenty in
feeds upon small crabs
esh is considered rather
LESS OPHIDIUM is only
long; the head is very
y is ensiform, consider-
ards the tail.

nus of Lizards, princi-
by the absence of eye-
ess, a species found in
live colour above: two
nd along each side of
hese lines separates two
, which are small and
he reptile is young, but
and confused in adults;
ith.

arck's name for a genus

lphis.) The name of a
quadrupeds (of the genus
to the American conti-
about twenty species are
m being scarcely larger

LPHIS CANCRIVORA.)

ry are characterized by
incisor teeth,—which
eight below; three an-

terior compressed molars, and four sharply tuberculated back molars, the superior of which are triangular, the inferior oblong: so that, with the four canines, they have in all fifty teeth, a number greater than has as yet been observed in any other quadruped, except the newly-discovered *Myrmecobius*. The limbs are short; the feet plantigrade; and the toes, which are five on each foot, armed with sharp, strong, curved claws, except the inner toe or thumb on the hinder feet, which is opposable and destitute of a nail. The tail is scaly and naked, except at its base; and is usually more or less prehensile. In some of the smaller species the pouch is almost entirely wanting, being indicated only by a slight fold of skin; and in these the young adhere to the mother by entwining their little prehensile tails around hers, clinging to the fur of her back.

When, on the discovery of the Western Continent, this singular genus first became known, this hitherto unheard-of contrivance of nature for the protection and preservation of the young justly excited the admiration of naturalists; nor can any one, indeed, who for the first time witnesses this marsupial wonder, withhold the expressions or conceal the signs of his astonishment.

The VIRGINIAN OPOSSUM (*Didelphis Virginiana*), being one of the largest and most robust of the genus, and at the same time common in many parts of the southern states of North America, we shall take it as the best species to describe. This animal is about the size of a cat, but appears thicker owing to the length and upright growth of the fur. It has a long sharpened face, and very wide mouth, armed with numerous

VIRGINIAN OPOSSUM.
(DIDELPHIS VIRGINIANA.)

sharp teeth; the ears are thin, naked, round, and blackish, edged with a border of white: the legs are short; the feet armed with short claws, but the interior toes of the hind feet are flat and rounded. The whole hair is of a wool-like softness, short on the face and body, but long on the legs; and the general colour is a light gray. The tail is thick and black for upwards of three inches at the base, and is covered with small scales. The Opossum is a nocturnal and timid animal, residing in the day-time in the hollows of trees, or among the branches, and prowling at night in search of its food, which consists of insects, eggs, birds, small reptiles, &c., as also fruits and roots; sometimes even invading the precincts of the farm-house, and killing the poultry. Its movements on the ground are slow and awkward; but it climbs trees with great facility, and uses its prehensile tail with great effect in suspending

itself from the branches. When alarmed or irritated, it emits a most disgusting odour. In captivity it is slothful, and becomes inordinately fat, eating both animal and vegetable food with voracity. The flesh resembles in flavour that of a young pig. The wool, especially of those killed during the winter, is very long and fine, and might be advantageously employed in many manufactures.

The places in which the Opossum is usually found are thick woods, where they generally dwell in the hollow of decayed trees. They are usually hunted in the autumn, after the first frosts. Instead of taking to flight as soon as they perceive the approach of danger, they lie close to the branch on which they were clinging; and when they are discovered, the hunters take them by shaking the branch violently, when they fall to the ground: if, however, the hunter is unaccompanied by dogs, they either steal quietly away, or assume a death-like position, in which they will persevere even if taken up and handled. The female has ten to fifteen young, and she conceals herself in a thick nest of dry grass, in some obscure retreat. When first born, the young are in a very undeveloped state, being minute, blind, naked, and shapeless; but they are always found adhering to the teats of the mother, protected by her pouch. There they remain for fifty days, until they have attained the size of a mouse, at which period their eyes are opened, and their bodies are covered with hair. They may now be seen occasionally venturing from their hiding-place, but return to it on the least appearance of danger: nor do they absolutely withdraw from the care of the parent for a long time after; for when they no longer resort to her pouch for protection, it is said that they jump on her back, and twine their tails securely in hers, so that she may carry them out of the reach of danger.

ORANGE-TIP [BUTTERFLIES]. A name applied by insect collectors to Butterflies of the genus *Mancipium*.

ORANG-OUTANG. (*Simia Satyrus.*) Wonderful are the accounts which some of the earlier travellers have related of this quadrumanous animal, — the far-famed "Wild Man of the Woods,"— his size, swiftness, address, and ferocity. Persons, however, who have viewed these creatures only in a state of captivity have been particularly struck with their patient and docile dispositions, and their comparative helplessness; but the fact is, that the specimens seen in Europe have all been very young; and it is well-known that in their adult state, when their muscular power is more fully developed, their disposition alters, and they become as dangerously mischievous as they are then formidable.

The Orang-Outang is a native of the most unfrequented forests in the interior of Sumatra, Borneo, Malacca, &c.; living chiefly on fruits, but occasionally eating eggs, insects, and reptiles. In early youth it is remarkable for its rotundity of cranium and height of forehead; but these outward marks of superior mental power disappear as the animal advances in age. They have arms so long that the tops of the fingers can touch the ground when they stand upright; the body is covered with coarse reddish hair; on the head, shoulders, and back it is thick, but on the fore parts of the body rather thin; the neck is short and thick; the voice has a peculiarly shrill and hollow tone; the lips are thin and protuberant, the ears small, the nose particularly flat, and the face has a bluish cast.

ORANG-OUTANG. — (SIMIA SATYRUS.)

One of the most authentic accounts of this animal in its wild state, and which at the same time conveys a good idea of its powerful frame and arboreal habits, is given by Dr. Clarke Abel, in the 'Asiatic Researches,' who describes the capture of an Orang-Outang on the north-west coast of Sumatra. He was discovered by the company of a merchant's ship at a place called Ramboon; and on the approach of the boat's crew he came down from a tree, and made for a clump at some distance, "walking erect with a waddling gait, but sometimes accelerating his motion with his hands, and occasionally impelling himself forward by the bough of a tree. On being driven to a small clump, he gained by one spring a very lofty branch, and bounded from one branch to another with the swiftness of a common monkey, his progress being as rapid as that of a swift horse. After receiving five balls his exertions relaxed, and, reclining exhausted against a branch, he vomited a quantity of blood. The ammunition of the hunters being by this time exhausted, they were obliged to fell the tree in order to obtain him. But what was their surprise, to see him, as the tree was falling, effect his retreat to another, with seemingly undiminished vigour! In fact, they were forced to cut down all the trees before they could force him to combat his enemies on the ground, and when finally overpowered by numbers, and nearly in a dying state, he seized a spear made of a supple wood, which would have withstood the strength of the stoutest man, and broke it like a reed. It was stated by those who aided in his death, that the human-like expression of his countenance, and his piteous manner of placing his hands over his wounds, distressed their feelings so as

question the nature committing. He was a broad expanded alist. His chin was hat curled neatly on an ornamental rather ndage to his visage. ven in proportion to were much shorter. a wonderful beast to more about him to a fear. His hair was d his whole appear- in the full vigour of

s of Conchifers, found coasts of Peru and Northern seas. The are horny, sub-orbi- ed, the upper valve at. In the centre of l depression, with an for the passage of a impressions in each animal has two short

URER MOTH. The those species of Moths a vapouring kind of English name), which ers, furnished with gs, and therefore in- male of the common

TH.—MALE. NTIQUA.)

O. antiqua), which we es from one inch and half in the expanse h are of a red brown, two undulated strigæ,

AND THE ALMOST MALE OF THE H MOTH.

rminates in a kidney- ar the anal angle of h a *pale clay-coloured*, dal spot. The hind wings are dark orange-brown. The female is dull ash-coloured, with the rudiments of wings very pale. The caterpillar is very handsome, being spotted with red, and with four thick whitish tufts of hair on the back, and with long pencils of clavate hairs on the sides of the head, at the sides of the body, and over the tail. The ground colour of the body of the male is darker than in the female, which is varied with pale yellow and gray. They feed on a great variety of trees, and are found throughout the summer. The Moth appears in the autumn, and is seen flying during the day-time, even in the streets of London.

ORIOLE. A name applied to birds of different groups,— the European Oriole being allied to the Thrushes, the American Oriole to the Starlings. The first species we describe

GOLDEN ORIOLE.—(ORIOLUS GALBULA.)

is the GOLDEN ORIOLE (*Oriolus galbula*), or, as it is sometimes called, the GOLDEN THRUSH, is during the summer months an inhabitant of many of the temperate and warmer parts of Europe, though its presence in this country is very rare. It is about the size of a blackbird, but its bill is larger, arched, and slightly notched at the tip. Its colour is a very fine bright golden yellow, except the wings and tail, which are black; but the quill feathers and some of the larger coverts are tipped with yellow, the latter forming a small yellow spot on the edge of the wing: all the tail feathers, except the two middle ones, are tipped with yellow: the bill is brownish-red, and between the bill and eye is a black stripe; the legs are brown. The female differs widely from the male in colour: where he is yellow, she is of a dull olive green; her wing-coverts, secondary quills, and upper parts of the tail feathers, partake of the same colour, but are much darker; the quills and lower ends of the tail feathers are dusky, and, as well as the former, are all tipped, more or less, with pale dull yellow. This bird is of a migratory nature, and is supposed to spend the winter in Asia and Africa, and to pass the summer in Europe. When about to construct its nest, the Golden Oriole selects the forked extremity of some slender branch (usually in the lower part of a high tree), and wreathing the two forks round with straws, grasses, or other vegetable fibres proper for the purpose, at length connects the two ends in order to form the verge of the nest; then continuing the straws from the one side to

the other, giving the whole a proper depth, and crossing and interweaving them as the work proceeds, forms the concavity or basket, which is afterwards thickened with the stems of the finer grasses, intermixed with mosses and lichens, and lined with feathers and still finer materials. It usually lays four or five eggs, which are of a dull white colour, speckled with black.

The name Oriole, as we have said, is also applied to birds allied to the Starlings, to which naturalists have applied the names of *Icterus* and *Agelaius*. Nearly all the birds which belong to this numerous and beautiful genus are natives of the American continent. Some of the species are gregarious, others solitary in their habits; but all are of a noisy and restless disposition, and feed on various kinds of fruit, grain, and insects. They are remarkable for the structure of their nest, which in some species hangs from the branch to which it is attached, and in others is sewed or fastened with peculiar art beneath the surface of some very large leaf. The bill of this genus is straight, conical, and very sharp-pointed; mandibles of equal length; nostrils small, placed at the base of the bill, and partly covered; tongue divided at the end; toes three forward and one backward; the middle joined near the base to the outermost one.

The Baltimore Oriole (*Icterus Baltimore*) takes its name (according to Catesby) from its colours, which are black and orange, being those of the arms or livery of Lord Baltimore, formerly proprietary of Maryland. This bird is seven inches in length; bill almost straight, strong, tapering to a sharp point, black, and sometimes lead-coloured, above, the lower mandible light blue towards the base. Head, throat, upper part of the back and wings, black; lower part of the back, rump, and whole under parts, a bright orange, deepening into vermillion on the breast; the black on the shoulders is also divided by a band of orange; exterior edges of the greater wing-coverts, as well as the

Baltimore bird.—(Icterus Baltimore.)

edges of the secondaries, and part of those of the primaries, white; the tail feathers under the coverts, orange; the two middle ones, from thence to the tips, are black, the next five, on each side, black near the coverts, and orange towards the extremities, so disposed, that when the tail is expanded, and the coverts removed, the black appears in the form of a pyramid, supp arch of orange. Tail slightly exterior feather on each side a inch shorter than the others: light blue, or lead colour: ir hazel.

Almost the whole genus of pensile nests. In Wilson's Am thology we read, that "so soli Baltimore to procure proper his nest, that, in the season the women in the country necessity of narrowly watching that may chance to be cut blanc farmer to secure his young gr Baltimore, finding the former, a which secure the latter, so well his purpose, frequently carries should the one be over heavy, too firmly tied, he will tug at siderable time before he gives up Skeins of silk and hanks of been often found, after the leave hanging round the Baltimore's woven up, and entangled, as t irreclaimable. Before the int Europeans, no such material co obtained here; but, with the good architect, he has improved stance to his advantage; and and best materials are uniform those parts by which the whole Their principal food consists of beetles, and bugs, particularly brilliant glossy green, fragment have almost always found in th and sometimes these only. Th Baltimore is a clear mellow whi at short intervals as he glean branches. There is in it a plaintiveness and sweet exte esting. It is not uttered with of the ferruginous thrush (T and some other eminent songst the pleasing tranquillity of a cou boy, whistling merrily for his ment. When alarmed by an his nest, or any such circumstan a kind of rapid chirruping, v from his usual note. This, ho ways succeeded by those mellow seem so congenial to his nature.

"The Baltimore inhabits N from Canada to Mexico, and as far south as Brasil. Since our cities have been planted wi tiful and stately tree, the Lomb these birds are our constant v the early part of summer; a noise and tumult of coaches, barrows, and the din of the ma are heard chanting "their sacr wild;" sometimes, too, within of an oyster-man, who stand with the lungs of a Stentor, un of the same tree; so much will cle even birds to the roar of to sounds and noises, that, in stances, would put a whole gre flight. These birds are several ceiving their complete plumage the whole tail of a male indivi is yellow, sometimes only the

re black, and frequently the black
ck is skirted with orange, and the
d with the same colour. Three
ave reason to believe, are necessary
full tint of the plumage, and then
bird appears as already described.
difference between the male and
altimore Oriole is the superior
of the orange colour of the former
f the latter. The black on the
er part of the back and throat of
e, is intermixed with dull orange;
in the male, those parts are of a
ing black; the tail of the female
s the greater part of the black, and
lower parts are of a much duskier

ED-WINGED STARLING (*Agelaius*
) — the *Sturnus predatorius* of
is thus described by that observant
drious ornithologist: — "This no-
nd celebrated corn-thief, the long
dunderer and pest of our honest
lous farmers, now presents himself
, with his female copartner in
to receive the character due for
r active and distinguished services.
gesting the nature of these, I shall
r to render strict historical justice
oted pair; adhering to the honest
s of the poet,

Nothing extenuate,
set down aught in malice.

reader divest himself equally of
, and we shall be at no loss to as-
ecurately their true character.
Red-winged Starlings, though ge-
migratory in the states north of
, are found during winter in im-
cks, sometimes associated with the
ckles, and often by themselves,

RED-WINGED STARLING.
(AGELAIUS PHŒNICEUS.)

whole lower parts of Virginia,
dinas, Georgia, and Louisiana, par-
ear the sea coast, and in the vici-
rge rice and corn fields. In the
f January and February, while
rough the former of these countries,
greatly entertained with the aerial
s of these great bodies of Starlings.
s they appeared driving about like
one black cloud carried before the
rying its shape every moment.
suddenly rising from the fields
with a noise like thunder; while
rieg of innumerable wings of the
vermillion amid the black cloud
ed, produced on these occasions a
very striking and splendid effect. Then descending like a torrent, and covering the branches of some detached grove, or clump of trees, the whole congregated multitude commenced one general concert or chorus, that I have plainly distinguished at the distance of more than two miles; and, when listened to at the intermediate space of about a quarter of a mile, with a slight breeze of wind to swell and soften the flow of its cadences, was to me grand, and even sublime. The whole season of winter, that, with most birds, is passed in struggling to sustain life in silent melancholy, is, with the Red-wings, one continued carnival. The profuse gleanings of the old rice, corn, and buckwheat fields, supply them with abundant food, at once ready and nutritious; and the intermediate time is spent either in aerial manœuvres, or in grand vocal performances, as if solicitous to supply the absence of all the tuneful summer tribes, and to cheer the dejected face of nature with their whole combined powers of harmony.

"About the 20th of March, or earlier, if the season be open, they begin to enter Pennsylvania in numerous, though small parties. These migrating flocks are usually observed from daybreak to eight or nine in the morning, passing to the north, chattering to each other as they fly along; and, in spite of all our antipathy, their well-known notes and appearance, after the long and dreary solitude of winter, inspire cheerful and pleasing ideas of returning spring, warmth, and verdure. Selecting their old haunts, every meadow is soon enlivened by their presence. They continue in small parties to frequent the low borders of creeks, swamps, and ponds, till about the middle of April, when they separate in pairs to breed; and, about the last week in April or first in May, begin to construct their nest. The place chosen for this is generally within the precincts of a marsh or swamp, meadow, or other like watery situation, — the spot, usually a thicket of alder bushes, at the height of six or seven feet from the ground; sometimes in a detached bush, in a meadow of high grass; often in a tussock of rushes or coarse rank grass; and not unfrequently on the ground: in all which situations, I have repeatedly found them. When in a bush, they are generally composed outwardly of wet rushes, picked from the swamp, and long tough grass in large quantity, and well lined with very fine bent. The rushes, forming the exterior, are generally extended to several of the adjoining twigs, round which they are repeatedly and securely twisted; a precaution absolutely necessary for its preservation, on account of the flexible nature of the bushes in which it is placed. The same caution is observed when a tussock is chosen, by fastening the tops together, and intertwining the materials of which the nest is formed with the stalks of rushes around. When placed on the ground, less care and fewer materials being necessary, the nest is much simpler and slighter than before. The female lays five eggs, of a very pale light blue, marked with faint tinges of light purple and long straggling

Europe, he flies to meet the intruder, hovers at a short height over-head, uttering loud notes of distress; and, while in this situation, displays to great advantage the rich glowing scarlet of his wings, heightened by the jetty black of his general plumage. As the danger increases, his cries become more shrill and incessant, and his motions rapid and restless; the whole meadow is alarmed, and a collected crowd of his fellows hover around, and mingle their notes of alarm and agitation with his. When the young are taken away, or destroyed, he continues for several days near the place, restless and dejected, and generally recommences building soon after, in the same meadow. Towards the beginning or middle of August, the young birds begin to fly in flocks, and at that age nearly resemble the female, with the exception of some reddish or orange, that marks the shoulders of the males, and which increases in space and brilliancy as winter approaches. It has been frequently remarked, that, at this time, the young birds chiefly associate by themselves, there being sometimes not more than two or three old males observed in a flock of many thousands. These, from the superior blackness and rich red of their plumage, are very conspicuous.

"Before the beginning of September, these flocks have become numerous and formidable; and the young ears of maize, or Indian corn, being then in their soft, succulent, milky state, present a temptation that cannot be resisted. Reinforced by numerous and daily flocks from all parts of the interior, they pour down on the low countries in prodigious multitudes. Here they are seen, like vast clouds, wheeling and driving over the meadows and devoted corn fields, darkening the air with their numbers. Then commences the work of destruction on the corn, the husks of which, though composed of numerous envelopments of closely wrapt leaves, are soon completely or partially torn off; while from all quarters myriads continue to pour down like a tempest, blackening half an acre at a time; and, if not dis-

one general field, keep th
of the village all day pa
among it; and each be
bow and arrows, with w
expert, they generally c
great numbers of them.

"It must, however, be
scene of pillage is princi
the low countries, not far
or near the extensive fl
large rivers; and is also
the mouths of August and
this period, the corn h
hard shelly coat, and the
or wild oats, with a profus
that abound along the
now ripe, and in great
present a new and more
these marauding multitu
supply them with conveni
being often in almost in
rasses; and thither they
ing from all quarters o
some places, however, wh
dry, advantage is taken o
to destroy these birds, b
approaching the place, un
night, setting fire to th
places at once, which, be
in one general flame, the
blackbirds becomes univ
light of the conflagrati
down in vast numbers w
screaming over the place.
is used for the same purpo
strewed near the reeds
where they are known to
instantly set on fire, the
havoc is prodigious; and
by day to pick up the
About the first of Novem
move off towards the so
the sea coast, in the st
and Delaware, they conti
period.

"Such are the general
racter of the Red-winged
remain some facts to be

ber. For these vermin, the
rch with great diligence; in the
he roots of plants, in orchards,
s, as well as among buds, leaves,
s; and, from their known vo-
ultitudes of these insects which
must be immense. Let me
ls by a short computation: If
each bird, on an average, to
of these larvæ in a day (a very
lowance), a single pair, in four
usual time such food is sought
mums upwards of twelve thou-
believed, that not less than a
of those birds are distributed
ole extent of the United States
whose food, being nearly the
l swell the amount of vermin
twelve thousand millions. But
of young birds may be fairly
double that of their parents;
are constantly fed on larvæ,
three weeks, making only the
ce for them as for the old ones,
ould amount to four thousand
millions; making a grand total
ousand two hundred millions of
cts destroyed in the space of
by this single species! The
vages of such a hideous host of
d be sufficient to spread famine
ugh over a wide extent of the
est cultivated country on earth.
ay be said, is mere supposition.
r, supposition founded on known
ledged facts. I have never dis-
f these birds in spring without
most striking and satisfactory
ese facts; and though, in a
le kind, it is impossible to as-
ely the amount of the benefits
griculture from this and many
of our birds, yet, in the present
t resist the belief, that the ser-
species, in spring, are far more
d beneficial than the value of
ion of corn which a careful and
r permits himself to lose by it.
-winged Starling is nine inches
fourteen inches in extent; the
ur is a glossy black, with the
the whole lesser wing-coverts,
wer row of which is of a reddish
r, the rest a rich and splendid
and hill, glossy brownish black;
; bill, cylindrical above, com-
he sides, straight, running con-
the forehead, where it is pro-
ding and flattish towards the
sharp-pointed; tongue, nearly
bill, tapering and lacerated at
ail, rounded, the two middle
somewhat shorter than those
adjoining.
le is seven inches and a quarter
and twelve inches in extent;
reddish cream; from the nostril
and from the lower mandible,
es of the same, speckled with
the posterior angle of the eye
streak of brownish black covers
ar; throat, and whole lower
streaked with black and white,

the latter inclining to cream on the breast; whole plumage above, black, each feather bordered with pale brown, white, or bay, giving the bird a very mottled appearance; lesser coverts, the same; bill and legs as in the male."

We observe that Mr. Darwin, in his 'Researches,' speaking of the various birds which abound on the undulating grassy plains of Maldonado, says, "Several species of the genus Cassicus, allied to our Starlings in habits and structure, and of Tyrant Fly-catchers, and a Mocking-bird, from their numbers, give a character to the ornithology. Some of the Cassici are very beautiful, black and yellow being the prevailing colours; but *Oriolus ruber* offers an exception, in having its head, shoulders, and thighs of the most splendid scarlet. This bird differs from its congeners in being solitary. It frequents marshes; and, seated on the summit of a low bush, with its mouth wide open, utters a plaintive agreeable cry, which can be heard at a long distance."

ORNITHORHYNCHUS, or DUCK-BILLED PLATYPUS. (*Ornithorhynchus paradoxus.*) This extraordinary animal, which almost appears to be a link between the aquatic birds and the mammalia, is peculiar to New Holland and Van Diemen's Land. When the first specimen was sent to this country, the abnormal character of

DUCK-BILLED MULLIWONGO.
(ORNITHORHYNCHUS PARADOXUS.)

its beak excited the suspicion of naturalists that some trick had been attempted to be played off upon them; nor was it until one or two more arrived, that they were disposed to believe it was a *bona fide* appendage to the animal's body. The Ornithorhynchus is about twenty inches long, having a long and flattened body like that of the Otter, covered with a thick soft fur, moderately dark brown above, and whitish beneath. The muzzle is elongated, enlarged, and flattened, resembling the beak of a duck, like which, its edges are armed with transversal plates. The teeth are situate in the back part of the mouth, two on each side, with flat tops and no roots. The feet are furnished with a membrane uniting the toes, and in the anterior feet extending beyond the nails. The tail is flat and obtuse. From the form of this animal it is fitted to reside in the water; and it must feed on soft food, as the structure of the beak will not enable it to grasp any thing firmly. The central portion of the mandibles is a bony continuation from the skull, and anteriorly and laterally a cartilaginous substance, perfectly movable, extends some little distance from the bony portion. Feet five-toed and webbed. In the fore feet the web extends a short distance

beyond the claws, is loose, and falls back when the animal burrows: claws strong, blunt, the two lateral shorter than the three middle ones. Hind feet short, narrow, turned backwards, and, when the animal is at rest, somewhat resembling a fin. The male Ornithorhyncus is armed with a spur on each hind leg, having a canal in it similar to that in the poison-fang of venomous serpents, and, like this, also furnished with a gland at the base, secreting a fluid: hence it has been thought likely, though there is no evidence of the fact, that wounds produced by them would be dangerous. They have no external ear, and their eyes are very small, but brilliant. The motions of the mandibles in this animal, when seeking its food in the mud and water, are the same as those of a duck when feeding in similar situations. Their burrows are excavated in the banks of the streams they inhabit, and are of very curious construction. The entrance is situated near the water's edge, on a steep part of the bank, and is concealed amongst the herbage. The young are produced in a very imperfect state, and are very unlike the full-grown animal. The skin is entirely destitute of fur; the eyes are not formed, and their place is merely indicated by the presence of a few wrinkles on the skin. The margin of the bill is at that time soft, and the tongue advances to its front edge; so that the young animal can obtain nourishment by sucking, which was at first thought impossible. The mammary gland is very simple in structure, and is divided into a large number of separate lobes. The Ornithorhyncus, when asleep, rolls itself up like a hedgehog, or curls itself like a dog, keeping its back warm by bringing over it the flattened tail. It dresses its fur, combing it with its feet, and pecking at it with its beak; and seems to take great delight in keeping it smooth and clean.

In conclusion, we cannot but join in the remark of Dr. Shaw, who was the first to describe it. "Of all the Mammalia yet known it seems the most extraordinary in its conformation; exhibiting the perfect resemblance of the beak of a duck engrafted on the head of a quadruped."

ORTHOCERAS. A genus of fossil shells, found in strata mostly below the carboniferous or mountain limestone. These shells are straight, with septa regularly concave towards the aperture, perforated by a nearly cylindrical siphuncle near the centre of the disc.

ORTHOPTERA. An order of insects, distinguished by the following characters: The body generally less firm in texture than the *Coleoptera*, and covered by soft semi-membranous elytra furnished with nervures. The superior wings often overlap horizontally, as in the Cockroaches, but in many species they meet at an angle, as in the Grasshoppers and Locusts. The legs of some are formed for running, others for leaping. The antennæ are usually filiform, and sometimes extremely long and slender, in which case they are composed of innumerable minute joints. The parts of the mouth are well developed, and approach in structure those of the order Coleoptera. The Orthoptera undergo a semi-metamorphosis, of which all the mutations are reduced to the growth and development of the elytra and wings that are always visible in a rudimental state in the nymph. All the insects of this order, without exception, are terrestrial, even in the first two states of their existence. Some are carnivorous, or omnivorous, but the greater part feed on living plants. The Order comprises numerous well-known insects, often of large size and splendid colours; such as Grasshoppers, Locusts, &c.: nay, some of the largest known insects belong to it; a few species attaining the length of eight or nine inches. Comparatively few are found in temperate regions, the tropics claiming the largest and most splendidly coloured among them. All the insects belonging to this order, except the *Mantidæ*, which prey on other insects, are destructive to vegetation, or injurious to our household possessions.

ORTOLAN. (*Emberiza hortulana.*) This bird, so much esteemed for the delicacy of its flesh, is a native of the southern parts of Europe, and a summer visitor also of the central and northern parts. It is a species of *Fringillidæ*, rather more than six inches in length, and to a cursory observer might be easily mistaken for the yellow-hammer. It is yellow on the throat and around the eyes; the breast and belly are a reddish bay; the rump red; and the upper part of the body brown, varied with black; bill and feet inclining to flesh-colour. No bird whatever has been so highly celebrated in the annals of gastronomy as the Ortolan, whether we consider the practices resorted to at the present day to fit them for the tables of the wealthy, or refer to the enormous prices paid for them by the epicures of ancient Rome. The manner in which they are artificially brought to the highest degree of perfection, in Italy and the south of France, is by confining them in a room from which the rays of the sun are excluded, and which is lighted by lamps kept constantly burning. There the birds are kept plentifully supplied with millet seed and other food of the most nutritive kind, till they become mere lumps of fat; in which state they are regarded as

ORTOLAN.—(EMBERIZA HORTULANA.)

most delicious, although so rich as soon to attain the appetite of even a professed gourmand. A great traffic was formerly carried on from the island of Cyprus in these birds. They are caught in vast numbers there, and pickled in casks, each containing from three to four hundred, prepared with spice and vinegar. In some years the number of casks exported has amounted to 400, or, upon an average, 14,000 of these highly-prized morsels.—The Ortolan frequents hilly places, but sometimes makes its nest on the ground in corn-fields; and lays four or five dull white or grayish eggs, speckled and spotted with black.

ORTYGOMETRA. A genus of Grallatorial birds, containing the COMMON CRAKE (which see).

ORTYX. A genus of Gallinaceous birds, which may be regarded as the Partridges

PASTORALIAN QUAIL.—(O. CALIFORNICUS.)

and Quails of America, but differing from those of the Eastern hemisphere in some striking features. They have a shorter and thicker beak, more convex above; and some have remarkable recurved top-knots. They perch on branches, and when disturbed, even on trees.

Mr. Gould has published a beautifully illustrated monograph of them. Our first figure represents the finely crested and gracefully shaped and coloured Californian Quail, which, as the name implies, is a native of California: our second represents a species which has been long known and described as the AMERICAN QUAIL, or PARTRIDGE, as it is termed (*Ortyx Virginianus*), and is found from New England to Honduras. It is about nine inches in length; the bill is black; eye dark hazel; crown, neck, and upper part of the breast, red brown; sides of the neck spotted with white and black on a reddish brown ground; line over the eye, down the neck, and whole chin pure white, bordered by a band of black, which descends and forms a crescent on the throat: the back, scapulars, and lesser coverts, red brown, mixed with ash, and minutely marked with black; wings plain and dusky; lower part of the breast and belly whitish, marked with black arrow-heads; tail ash, spotted with yellow brown. Notwithstanding there is some resemblance in form and general appearance between the Quails of the two continents, they differ very widely in their habits. Instead of being a kind of passage, scarcely any of the feathered tribe appear to have such strong local attachments as the American Quail. The female constructs her simple nest, in May, generally at the foot of a thick tuft of grass, that shelters and conceals it; and lays from fifteen to twenty eggs, which

AMERICAN QUAIL.—(ORTYX VIRGINIANUS.)

are perfectly white. Wilson is of opinion that the common idea, that Quails occasionally lay in each other's nests, is correct. About the beginning of September the young birds nearly attain their full growth, and associate in flocks or coveys of various sizes; at which time also their untiring persecution by sportsmen and trappers begins. During the end of the summer and the beginning of the autumn, the note of the male is everywhere heard; and by the commencement of October they enter on what is termed their *running* season, when they are to be met with in swamps and thickets, instead of the open fields. They are particularly fond of buck-wheat and Indian corn; but grain of all kinds, seeds, and insects, supply them with food. Like the rest of the gallinaceous tribe, they fly with a loud whirring sound, occasioned by the shortness of their wings and the rapidity with which they move them. During the winter they often suffer severely from the inclemency of the weather and whole coveys are found frozen in spots where they had endeavoured to shelter themselves.

ORYCTEROPUS, or AARD-VARK. (*Orycteropus Capensis.*) This insectivorous animal partakes of the nature both of the Ant-eater and the Armadillo; agreeing with the former in its general habits, but, although entirely destitute of scaly armour, more resembling the latter as to its anatomical structure. The skin is thick, coarse, and covered with stiff hair; the limbs short, thick, and very muscular. It is of a deep gray colour, tinged with reddish brown on the sides, and blackish legs: the fore-feet have each four stout toes, armed with large solid nails, the hind ones five; and the nails or claws on all the feet are remarkably strong. This animal is very common in some parts of South Africa, and has received the name of Aard-vark (earth hog) from the Dutch colonists at the Cape of Good Hope, from its habit of burrowing (which its taper head and powerful claws are admirably adapted for), as well as from its fancied

resemblance to a small short-legged pig, which at first sight it conveys a tolerable notion of. When full grown the Aard-vark measures about five feet from the tip of the

ORYCTEROPUS CAPENSIS.

snout to the end of the tail, the latter being nearly half the length of the body. By means of its long glutinous tongue it feeds principally on ants, which, after it has effected an entrance into their dome-like habitations, it literally devours by thousands; and as these insects in tropical climates are not only very large, but of a fat and unctuous nature, and found in immense abundance, the animal is generally in good condition. The flesh is allowed to be wholesome and palatable food, and the hind quarters especially, when cured as hams, are much esteemed.

ORYX; or EGYPTIAN ANTELOPE. (*Oryx gazella.*) The size of the Egyptian Antelope, or Pasan, is somewhat superior to that of a deer, and it is more easily distinguished than many others in this extensive race; the horns affording a character perfectly clear and constant, being three feet long, nearly straight, annulated half way up, and gradually tapering to the point. The head is white, with triangular patches of black on the forehead and under the eyes: the neck and upper part of the body are of a pale bluish gray; the belly and insides of the limbs are white; and a dark stripe runs along the back to the tail, which much resembles that of a horse. The hoofs and horns are black: the hair under the throat, along the ridge of the back, and over the shoulders, is long and rough. It inhabits different parts of Africa, and is met with also in Persia, India, and Arabia. It is resolute and dangerous when hard pressed, its long sharp horns being used with amazing energy and address.

OSPHRANTER. A genus of Kangaroos figured in Mr. Gould's fine work. One species, *O. Antilopinus*, or Red Wallaroo, is from Port Essington. Capt. Chambers informed Mr. Gould, that, when hard pressed, this robust-formed animal becomes exceedingly fierce and bold, and while among the rocks and at bay, a most dangerous antagonist, one of his finest dogs being tumbled over a precipice and killed by an old male. The female is much smaller than the male, the former being but five feet six inches from the snout to the end of the tail; while the latter is at least seven feet three inches.

OSPREY. (*Pandion haliaetus.*) This is one of the most numerous of all the large birds of prey, and is found scattered over the whole of Europe. Its haunts are on and on the borders of rivers principal food is fish, upon with great rapidity and It is nearly two feet in leng eye yellow; the head is small crown white, marked with spots; the cheeks, and all the the body, are white, slightly brown on the breast; from the

OSPREY.—(PANDION HA

eye a streak of dark brown the side of the neck towards upper part of the body is bro are very short, thick, strong, blue colour, and the claws bla toe is larger than the inner a turns backwards, by which bird can more readily secure prey. The Osprey builds its rocks or on fir-trees, and lays eggs, of an elliptical form, rat those of a hen.

OSTEOLEPIS, or BONY-S An ichthyolite of very singu discovered by Mr. Hugh Mil scribed by him in his work, Old Red Sandstone,' &c. We account of it in his own word accustomed to see vertebrated the bone uncovered in one part part the teeth,—and with th skeleton wrapped up in fle Among the reptiles we find a fi but a creature with a skull as teeth,—the bone being merely these, by a hard shining enam toes also of bare enamelled bon deemed an anomaly in creati such was the condition of the many of its contemporaries. T teeth were placed in jaws wh outside a surface as naked and melled as their own. The ena covered with enamelled enam nished inside like other bones their cellular construction, wit rishing blood-vessels, and perh and which rested apparently o ginous box, which must have brain, and connected in with

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[E.A. [See Oyster.]

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in the character of the plumage, that the want of adaptation of these birds to flight in the air is manifested: for the barbs of the feathers have so little adhesion to each other, that the air can pass readily between them. It may indeed be said, that while the Ostrich has the general outline and properties of a bird, it still retains many of the traits of a quadruped, and appears to fill up the chasm in nature which separates one class of beings from another. No bird, however, is more justly celebrated, not only from the beauty and value of its plumage, but also from its great size and peculiar habits.

The African or True Ostrich (*Struthio camelus*) is from seven to eight feet high from the top of its head to the ground: much of this, however, is made up by the great length of its neck. Its head is small, and both it and the neck are destitute of feathers, having only a few scattered hairs. The feathers on the body of the male bird are black; but on the female dusky; those of the wings and tail are white, sometimes marked with black; and on each of the wings are two spurs, about an inch long. The thighs are naked, and the legs hard and scaly. It has two very

Ostrich.—(Struthio camelus.)

large toes, of unequal size; the largest, which is on the inside, is seven inches long, including the claw; the other, about four inches, is destitute of a claw. It inhabits the sandy deserts of Arabia and Africa, in large flocks; everywhere avoiding the presence of Man, but not disliking the society of other animals. The wings are furnished with loose and flexible plumes. The elegance of these feathers, arising from their slender stems and the disunited barbs, has occasioned them to be prized in all ages; and as they still constitute a valuable article of commerce, there is no chance of the Ostrich being allowed to remain undisturbed, even in the desolate regions which he inhabits. The hunting of this bird is extremely laborious, as he is far swifter than the fleetest horse. The mode adopted by the Arabians and Moors is to continue the pursuit as long as

possible, when the chase is taken up by another on a fresh horse, till the bird is worn down; which is the more readily done, as the Ostrich, instead of pursuing a straight course, runs in a circuitous direction. The European sportsman, we are told, after riding so that the bird shall pass within shot, dismounts and brings it down with the rifle. In Sir James Alexander's Travels we read that the Kaffirs nimbly pursue the fleet and powerful Ostrich, and enclose him; when he makes a rush at a part of the circle, kicking out furiously, and clearing all before him, if not mortally and speedily *assegaied*.

The Ostrich has a capacious crop, strong gizzard, and voluminous intestines; feeds voraciously on grain, grass, &c., and so obtuse is its taste that it will swallow pieces of leather, metal, wood, or any hard substances. In this it is probably guided by the same instinct that leads the fowl to swallow gravel: for they are probably of use in assisting the action of the gizzard in the reduction of the food. Dr. Shaw asserts that he saw one at Oran that swallowed, without any seeming inconvenience, several leaden bullets, as they were thrown upon the floor, scorching hot from the mould. The female lays from ten to twelve eggs in a hole in the sand; and, although she does not incubate them continually, no bird has a stronger affection for its offspring, or watches its nest with more assiduity. Contrary to the general opinion, she always broods over her eggs at night, only leaving them during the hottest part of the day. In procuring the eggs from the nest, the natives are very careful not to touch any with their hands, as the parent birds are sure to discover it on their return, and not only desist from laying any more in the same place, but trample to pieces all those that have been left; therefore a long stick is always used to push them out of the nest. The eggs, which weigh about three pounds each, are said to be a great delicacy, and are prepared for the table in various ways. Ostriches are polygamous birds; one male being generally seen with two or three females, and sometimes with more. In a tame state they are tractable and familiar towards persons whom they know, but are often fierce towards strangers, whom they will attempt to push down by running furiously upon them; and on succeeding in this effort, they not only peck at their fallen foe with their beak, but strike at him with their feet with the utmost violence. When thus engaged, they make a fierce hissing noise, and have their throats inflated and mouths open, but at other times they have a kind of cackling voice.

The species *Rhea Americana*, which by some is called the American Ostrich, inhabits various parts of South America to the southward of the equator, but is principally found on the great plains in Buenos Ayres and the adjoining states. It differs essentially, however, from the true Ostrich, having three toes instead of two; is much smaller; and is of a uniform gray colour, except on the back, which has a brown tint. The back and rump are furnished with long feathers, but not of the same rich and costly kind as

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me given to a family of . Those which are pe- Hemisphere and to Aus- g neck and legs, stout bs of the Ostrich. [For , see BUSTARD.]

of Pedunculated Cirri- Indian coast, commonly s covered by the sea. adrate, supported on a a gaping aperture and ular tubes; five small bering near the sides of

sub-genus of fishes be- ly *Sciænidæ*, inhabiting and Atlantic coasts of *lithus regalis*, or SQUE- from a foot to fifteen en grows much larger. are brown, with fre- enish; faintly silvery above the lateral line, ppear on the sides; and holly of a clear white. nd pale yellow. There ine teeth in the upper rmed with a single row teeth; and the under with a row of small d anteriorly. The two rated, and the second, and anal, is in a great all scales. Dr. Mitchell, s, observes that it is "a ance, wholesome and ather soft. He is taken d sean, and is brought rket in great numbers months. He is called y, because he does not r he is hooked; or, as e labouring men, who r weak by reason of the t in that kind of food. ses under water, of a low rumbling or drumming kind, are ascribed by the fishermen to the Squetague. Whether the sound came from these fishes or not, it is certain, that during their season, only, they may be heard from the bottom of the water, in places frequented by the weak-fish, and not elsewhere. The swimming-bladder is convertible into good glue. I have eaten as fine blanc-mange made from it as from the isinglass of the sturgeon."

OTTER. (*Lutra vulgaris.*) This aquatic quadruped is about two feet long from the nose to the insertion of the tail, which is fifteen inches more; its body is elongated and much flattened; the tail is flat and broad; the legs are short and strong, but so loosely articulated as to turn in every direction while swimming; the feet broad, and the toes connected by a complete web: its structure is consequently well adapted for an aquatic life: and it feeds almost entirely on fish. It swims and dives with great readiness, and with peculiar ease and elegance of movement. Its teeth are sharp and strong, and the tubercles of the molars very pointed, a modification necessary to secure the prehension and speedy destruction of their agile and slippery prey. It has a black nose and long whiskers; the eyes are

SKULL OF OTTER.

very small, and placed nearer the nose than in most other animals; the upper jaw is longer and broader than the lower; the ears small and erect; and the skin is protected by a compact fur, which consists of two kinds of hair, the longer and stiffer shining hairs, which are grayish at the base and a rich brown at the point, concealing an extremely fine and soft fur of a light gray colour, brown at the tip: the under parts of the body, inner parts of the limbs, and the cheeks, are of a brownish-gray throughout.

The Otter can be domesticated, though, from its ferocious disposition, this is a task of much difficulty. In order to do it effectually, so that the animal might be trained to catch fish or assist in fishing, it is recommended that they should be procured as young as possible, and be first fed with small fish and water. Then bread and milk is to be alternated with the fish, and the proportion of the former gradually increased till they are led to live entirely on bread and milk. They are then taught to fetch and carry, as dogs are trained, and when they are brought to do this well, a leather fish stuffed with wool is employed as the thing to be fetched: they are afterwards exercised with a dead fish, and chastised if they attempt to tear it. *Finally* they are sent into the water after

are not to be easily taken. When the Otter, in its wild state, has taken a fish, it carries it on shore, and devours the head and upper parts, rejecting the remainder. The female produces four or five young in the spring of the year.

There are numerous instances on record of their being tamed and educated; one of which we copy, as peculiarly interesting, from the Journal of the late Bishop Heber: "We passed," says this exemplary prelate, "to my surprise, a row of no less than nine or ten large and very beautiful Otters, [we presume, of the species *Lutra nair*, F. Cuv.] tethered with straw collars and long strings to bamboo stakes on the banks (of the Matta Colly). Some were swimming about at the full extent of their strings, or lying half in and half out of the water; others were rolling themselves in the sun on the sandy bank, uttering a shrill, whistling noise, as if in play. I was told that most of the fishermen in this neighbourhood kept one or more of these animals, who were almost as tame as dogs, and of great use in fishing: sometimes driving the shoals into the nets, sometimes bringing out the larger fish with their teeth. I was much pleased and interested with the sight. It has always been a fancy of mine that the poor creatures whom we waste and persecute to death, for no cause but the gratification of our cruelty, might by reasonable treatment be made the sources of abundant amusement and advantage to us."

In the older annals of sporting in this country, Otter-hunting holds no inconsiderable place; and it is even still practised occasionally with dogs especially trained for the sport. "When the Otter is found," says Mr. Bell (*Hist. of Brit. Quad.*), "the scene becomes exceedingly animated. He instantly takes the water and dives, remaining a long time underneath it, and rising at a considerable distance from the place at which he dived. Then the anxious watch that is kept for his rising to 'vent,' the steady purpose with which the dogs follow and bait him as he swims, the attempts of the cunning beast

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arter of an hour, as the ing into the water as fast . Sometimes the young at her sides, at others by soon as there was suffi- to reach them from the took hold of them by outh, and drew them out d them round the pond and kept chattering to elling them not to go into

r CANADA OTTER (*Lutra* the European species, larger. Both have a these animals: this is to the top of a ridge of a sloping moist bank in ng on the belly, with the wards, they give them- with the hind legs that glide swiftly down the part they continue for a olour of the whole body, nd throat, which are a lossy brown. Many are of their skins, which are , and are much esteemed. e of taking them is by near the mouth of their

Enhydra lutris) is a much the preceding, and pre- tions of its palmated feet, s to form the type of a (*Enhydra*), which con- ch the Seal. It weighs ifty pounds. Its colour n is perfectly black; at lark brown. It has six r, and four in the lower being broad, and well ng crustaceous animals. , and swims with extreme its back, sides, or some- in the water. The hind of a seal, and have a the outside of the ex- of a goose. It is exclu- en the forty-ninth and th latitude, on the north- North America, and the atka and the adjoining t by placing a net among chasing it in boats. The but one at a birth, and ous in her attention to ng with and fondling it he Sea-Otter haunts sea- mostly in the water, and s more than to the The flesh of the young to be very delicate food. The Kamtschatdales, on animals are chiefly killed, a with the Russians for l sable, and the Russian em principally to the n they are in great re- for them at the rate of hundred roubles each. d the great distance from where they are obtained, are the obvious reasons why so few are seen in the European market. Sir George Simpson tells us that since 1814 the Russians have sent to market from California the enormous number of 80,000 Sea-Otters, besides a large supply of Fur Seals.

OUNCE. [See JAGUAR.]

OUZEL, or RING OUZEL. (*Turdus torquatus.*) This bird is somewhat larger than the Blackbird, which it much resembles in its general habits. Its general colour is dull black; each feather margined with ash

RING OUZEL.—(TURDUS TORQUATUS.)

gray; the bill is dusky; corners of the mouth and inside yellow; eyes hazel; and the legs dusky brown. The breast of the male is distinguished by a crescent of pure white, which almost surrounds the neck: on the female this crescent is much less conspicuous, and in some birds it is wholly wanting. Ring Ouzels are found in various parts of this kingdom, chiefly in the wilder and more mountainous districts. The female builds her nest in the same manner and in the same situations as the Blackbird, and lays four or five eggs of the same colour. Their food consists of insects and berries.

The WATER OUZEL, or DIPPER, (*Cinclus aquaticus*), is a bird of a very retired nature, resorting to small brooks and rivulets which flow rapidly among stones and fragments of rocks in hilly countries. There it may be seen perched on the top of a stone in the midst of a torrent, in a continual dipping motion, whilst watching for its food, which consists of small fishes and insects. The Rev. George Gordon mentions that in some of the rivers of the north of Scotland it is very partial to and destroys the spawn of the Sea Trout (*Salmo trutta*), from which it most probably has obtained its no enviable place in the following ancient distich:

"The Gordon, the gulle, and the *water-crave*
Are the three worst ills that the Moray ever saw."

The *Gordons* being one of the Highland clans, famed for their incursions in former times; and the *gulle* being a weed, very destructive in corn-fields. The upper parts of the head and neck are deepish rusty brown; the back, rump, scapulars, wing-coverts, belly, and

tail are black; but each feather on these parts is distinctly edged with hoary gray. The breast, fore part of the neck, and throat are of a snowy white, and the black and

WATER OUZEL, OR DIPPER.
(CINCLUS AQUATICUS.)

white on the belly are separated by a rusty brown. The legs are short and strong; the claws curved; and the toes are distinctly parted, without any membrane between to join them. It forms its nest in the holes of banks; and lays five eggs of a whitish colour, slightly tinged with red. "The most singular trait in its character," observes Bewick, "is that of its possessing the power of walking, in quest of its prey, on the pebbly bottom of a river, and with the same ease as on dry land." Upon this "trait" we find Mr. Waterton thus commenting: "This is the bird whose supposed sub-aquatic pranks have set the laws of gravity at defiance, by breaking through the general mandate which has ordained that things lighter than water shall rise towards its surface, and that things that are heavier shall sink beneath it." "If the Water-Ouzel, which is specifically lighter than water, can manage, by some inherent power, to walk on the ground at the bottom of a rivulet, then there is great reason to hope that we, who are heavier than air, may, any day, rise up into it, unassisted by artificial apparatus, such as wings, gas, steam, or broom-staff."

OVIS. [See SHEEP.]

OVULA. A genus of Mollusca, inhabiting the Indian and Chinese seas. Shell oblong, with elongated aperture, the ends of which in some species are so much lengthened as to make it fusiform or spindle-shaped; outer lip crenulated, inner lip smooth. The animal is furnished with two tentacula, having eyes at the base on small projections, like the *Cypræa*; mantle and foot large; the former however, having only one lobe.

OWL. (*Strigidæ.*) It is a common remark, that Owls may be considered as a kind of nocturnal hawks, differing, as Linnæus has observed, from those birds in the same manner as Moths differ from Butterflies; the one being chiefly nocturnal, and the other diurnal. They are distinguished by having a large head; great projecting eyes directed forwards, and surrounded with a circle or disc of loose and delicate feathers, covering the base of the beak and the opening of the

ear; a strong hooked bill; cr
and a downy plumage, general
barred with different shades
yellow. The feet are chiefly re
the power possessed by the ext
being turned either backwards
Unable to bear the brighter lig
the Owl retires to some lonely r
it passes the day in silence an
but at the approach of evenin
nature is desirous of repose, and
animals, which are its princip
seeking their nestling places, th
forth from its lurking holes in q
Its eyes are admirably adapt
purpose, being so formed as to
objects with greater facility in th
in broad daylight. Its flight
silent during its nocturnal exc
when it rests, it is then only kn
frightful and reiterated cries w
interrupts the silence of night,
from his retreat during the day,
broken and interrupted, and he i
attended by numbers of small
seeing his embarrassment, purs
incessant cries, tormenting him
movements; while the Owl rem
upon the branch of a tree, and
assembled group with all the sp
mockery and affectation. The
species of Owls, however, able to
distinctly in open day. And we
further, that although the *Strigi*
zled by too refulgent a light, the
some have imagined, see best in
nights. Their vision, generally
clearest in the dusk of the eve
dawning of the morning, or by
when they are not incommoded
too much or too little light: the
nocturnal vision differing conside
ever, in different species; some
exquisite acuteness in the gloo
while others invariably roam abr
morn or in the shades of even
hearing is very acute, and the
soft and loose, enabling them to
noise, and thus to come on their
unexpected manner. They fee
birds, mice, bats, and moths,
them entire, and casting up the
parts in the form of small balls.
in fissures of rocks, in old build
holes of trees, the female laying
to six eggs; and they are foun
part of the globe.

Mr. Hewitson, in his 'Illustrat
Eggs of Birds,' remarks that ther
and perfect similarity amongst
the different species of Owls whi
scarcely expect to find in the sp
which differ from each other so m
mode of breeding. The eggs of th
which are deposited in the holl
trees, and deserted ruins, and t
are found on the bare sod, and
the broad light of day and the pal
are alike without colour.

The Owl family is very nu
may be subdivided into the th
ing groups:—1. The *Typical O*
adaptation to nocturnal habits is

during the day, with their
present a great appearance
e a large external ear, and
plete discs around the eyes.
Owls, in which the external
ot the discs around the eyes
in which the head is fur-
o feathery tufts, resembling
Hawk Owls, in which the
very small, the facial discs
d the feathery tufts absent.

WL. (*Strix flammea.*) The
e, Barn, or Screech Owl is so
inhabitant of this country,
ge is acquainted with its
also spread through the tem-
mer regions of Europe, but

— (STRIX FLAMMEA.)

the higher latitudes. It is a
species, though, from the fre-
pearance, but little attended
Owl is about fourteen inches
e head and upper parts of
f a fine pale orange-colour,
by small scattered chestnut-
the feathers of the upper
k and the wing-coverts are
eir tips, finely sprinkled with
ree specks; while down the
ne a short series of alternate
e oblong spots: the face is
ruff elegantly edged by a
terminated with white: the
arred with pale brown, and
crossed by brownish freckles.
r parts are white, sometimes
w small dusky spots. Occa-
species the under parts are
legs are feathered or plumed
h are covered with fine hair.
if by day in deep recesses
ruins, in antique church
hollow of old trees, in barns,
other out-houses. Towards
s its perch, and takes a re-
ound the fields, skimming
d in quest of field mice, rats,
and large insects. During
ung are in the nest, the male
ernately sally out and beat
the regularity of a spaniel.
have seized their prey they
n their claws; but as it is
it into their bill, they al-
that purpose on the roof,
mpt to enter their nest.
(to whose intelligent re-
so much indebted, and who
out the services of the fea-
their proper light) tells his readers that "if this useful bird caught its food by day, instead of hunting for it by night, mankind would have ocular demonstration of its utility in thinning the country of mice; and it would be protected, and encouraged, everywhere. It would be with us what the Ibis was with the Egyptians. When it has young, it will bring a mouse to the nest every twelve or fifteen minutes. But, in order to have a proper idea of the enormous quantity of mice which this bird destroys, we must examine the pellets which it ejects from its stomach in the place of its retreat. Every pellet contains from four to seven skeletons of mice. In sixteen months from the time that the apartment of the owl on the old gateway was cleaned out, there has been a deposit of above a bushel of pellets. . . . When farmers complain that the Barn Owl destroys the eggs of their pigeons, they lay the saddle on the wrong horse. They ought to put it on the rat. Formerly I could get very few young pigeons till the rats were excluded effectually from the dovecot. Since that took place, it has produced a great abundance every year, though the Barn Owls frequent it, and are encouraged all around it. The Barn Owl merely resorts to it for repose and concealment. If it were really an enemy to the dovecot, we should see the pigeons in commotion as soon as it begins its evening flight; but the pigeons heed it not; whereas, if the sparrow-hawk or hobby should make its appearance, the whole community would be up at once; proof sufficient that the Barn Owl is not looked upon as a bad, or even a suspicious, character by the inhabitants of the dovecot."

Many other species, more or less resembling the Barn Owl, are found in different parts of the temperate regions of the globe.

The TAWNY OWL. (*Syrnium aluco.*) This bird is about the size of the Barn Owl. Its bill is white; its eyes dark blue: the radiated feathers round the eyes are white, finely streaked with brown; the head, neck, back, wing-coverts and scapulars are tawny brown, finely dotted with dark brown and black: on the wing-coverts and scapulars are several large white spots, regularly placed, so as to form three rows; the quill-feathers are marked with alternate bars of light and dark brown; the breast and belly are pale yellow, with narrow dark streaks pointing downwards, and crossed with similar ones: the legs are feathered down to the toes; the claws large, much hooked, and white. — This is the Owl that hoots by night, and sharply gives out the repeated cry of *tee-whit*, particularly in cold frosty nights. When these birds are slightly disturbed amid their slumbers in the vast and solitary woods, they will utter an inward tremulous hooting of *too-who*, the subdued and gloomy shivering of which is peculiarly horrific.

There are *some* lovers of nature, it seems, who are of a different opinion; or Mr. Hewitson would not thus express himself: "This is the Owl from which issues forth that loud melancholy sound at night, which, however much it may be associated with

goblins in the minds of others, is *extremely agreeable* to the ear that is fond of nature's sylvan sounds." The same writer tells us that "the Tawny Owl usually lays its eggs in a hollow tree, sometimes in the holes of rocks, and occasionally in the deserted nest of some other bird; they are round, large, bright, and glossy, from three to five in number, and are deposited at irregular intervals, the first being sat upon as soon as laid; the young of the same nest differ in consequence very considerably in their size."

The GREAT HORNED OWL. (*Bubo Virginianus.*) The Great Horned or Eagle Owl is but little inferior in size to the Golden Eagle; and is very destructive to young fawns, hares, rabbits, rats, moles, reptiles, partridges, grouse, and other game. It is found in the mountainous parts of Central Europe, and in almost every quarter of the United States; frequenting deep forest glens, and making its nest in the fissures of rocks, ruined castles, &c.; but in Britain it has been very rarely seen. "Along the mountainous shores of the Ohio, and amidst the deep forests of Indiana," says Wilson, "this ghostly watchman has frequently warned me of the approach of morning, and amused me with his singular exclamations, sometimes sweeping down and around my fire, uttering a loud and sudden *Waugh O! Waugh O!* sufficient to have alarmed a whole garrison. He has other nocturnal solos, no less melodious, one of which very strikingly resembles the half-suppressed screams of a person suffocating, or throttled, and cannot fail of being exceedingly entertaining to a lonely benighted traveller, in the midst of an Indian wilderness!" "There

GREAT HORNED OWL.—(BUBO VIRGINIANUS.)

is something in the character of the Owl so recluse, solitary, and mysterious, something so discordant in the tones of its voice, heard only amid the silence and gloom of night, and in the most lonely and sequestered situations, as to have strongly impressed the minds of mankind in general with sensations of awe and abhorrence of the whole tribe. The poets have indulged freely in this general prejudice; and in their descriptions and delineations of midnight storms and gloomy scenes of nature, the Owl is generally introduced to heighten the horror of the picture. Ignorance and superstition, in all ages and in all countries, listen to the voice of the Owl, and even contemplate its physiognomy, with feelings of disgust and kind of fearful awe." "Nothing is a ... effectual cure for superstition than a ... ledge of the general laws and productions nature; nor more forcibly leads our ... flections to the first, great, self-existent C... of all, to whom our reverential awe is ... humbly devoted, and not to any of his ... pendent creatures. With all the ... habits and ungracious tones of the Owl, ... is nothing in this bird supernatural or ... terious, or more than that of a simple ... of prey, formed for feeding by night, ... many other animals, and of reposing by ... The harshness of its voice, occasioned by ... width and capacity of its throat, may be ... tended by Heaven as an alarm and warn... to the birds and animals on which it ... to secure itself from danger. The voices ... all carnivorous birds and animals are ... observed to be harsh and hideous, ... for this very purpose." Its general ... is ferruginous, varied with larger and small ... spots and markings of brown, black, ... gray; together with innumerable ... specks. The larger wing and tail-feathers ... are obscurely varied by dusky transverse ... bars; the bill is black; the eyes very large ... and of a golden-orange colour; the legs ... short and strong, thickly clothed down ... the very claws with fine downy plumes; ... the claws are extremely large, strong, ... black. It rarely lays more than two eggs ... which are larger and rounder than those ... a hen, and of a reddish-brown colour, with ... darker blotches and variegations.

The GREAT SNOWY OWL. (*Surnia nyctea.*) This is one of the most beautiful of all the ... species, on account of its snowy whiteness ... and in size it nearly equals the Eagle Owl, ... which it also resembles in its general habits. ... It is one of the hardiest of all birds, and ...

OWL.—(SURNIA NYCTEA.)

found in very high northern latitudes of both ... the Old and New World; obtaining its food ... and rearing its young among rocky mountains and islands, in spite of all the vicissitudes of temperature and season. The bill ... is hooked, like a hawk's, with stiff feathers ... like hairs round its base, reflected forward ... and bright yellow irides. The head, ... body, wings, and tail, are of a pure white ...

egs and feet are covered with
s; and the claws are long,
and sharp pointed. The
is supposed, used to breed on
ncland Islands, but is now a
or to any part of the British

WING OWL. (*Athene cuniculata*
gular species is widely spread
merican continent, and is pe-
it inhabits the burrows of the
cha, and other small rodent
when these do not present
makes excavations for itself.
l bird, its length not exceeding

. The general designation for
species and varieties of the
ruped belonging to the genus
ally distinguished by having
horns, directed sideways, and
upwards or forwards in a
m; body thick and heavy;
inated by a tuft of hair; and
mammæ. The male of this
a BULL; the female, a Cow;
, a CALF. The name of *Ox* is
strated male, and he is called
Bull-calf until he is a twelve-
Steer until he is four years
that an *Ox* or *Bullock*.
Mr. Bell, in his 'History of
peda,' say, "Of all the ani-
ve been reduced into the im-
e of man, the Ox is without
to which he is most indebted
and extent of its means of
the qualities of the Dog are
d more intellectual character,
to closer communication with
l being; and if the Horse, as
ful and of draught, serve more
ate personal assistance; the
these and all others in the
powers while living, and the
of every part of the body
the wants, the comforts, and
his owner." "This universal

high and rebellious offence against the Majesty of Heaven, it was in the form of a golden calf that they modelled the object of their absurd and impious rites."

It has been the general opinion that the domestic races of our cattle are originally sprung from the *Bos bubalus*, the Indian and European Buffalo; but some treat of them as arising from the aurochs or wild cattle of Germany and Poland. Baron Cuvier, however, differs from both these suppositions, and considers our present cattle identical with a species no longer existing in a wild state, but which has, by the exertions of man, as in the instance of the camel and dromedary, been for ages entirely subjected to his power. The remains of this animal have been found in a fossil state, and it is upon the comparison of these remains with the skeleton of the aurochs, the buffalo, and our domestic races, that Cuvier founded his opinion.

The COMMON OX (*Bos taurus*) has a flat forehead, longer than it is broad, and round horns placed at the two extremities of a projecting line which separates the front from the occiput: the horns, however, differ so much in their form and direction in the numerous varieties which domestication has produced in this species, that no specific character can be based upon them. The colours of these animals are extremely variable, being reddish, white, gray, brown, black, &c. From what species the present useful and valuable domesticated breeds owe their origin, it would be very difficult to determine; but it is certain that their utility was well known to mankind in the very infancy of society, and that they still form the basis of the wealth of many countries, where the people subsist and flourish in proportion to the cultivation of their lands and the number of their cattle. Throughout a great part of the world, the flesh of the Ox is the principal article of animal food; while from the milk of the Cow, of itself an almost indispensable part of our diet, are manufactured cheese and butter. There is, indeed,

three years, and the term of its natural life is about fourteen.

The climate as well as the pasture of Great Britain is excellently adapted to the moderate nature of these animals; and the verdure and fertility of our plains are perfectly suited to their manner of feeding; for, being destitute of the superior fore-teeth, they love to graze in high and rich pastures; nor do they seem to be very choice as to the quality of their food, provided they have always an abundant supply of herbage. For this reason, in our English pastures, where the grass is rather high and flourishing, than succulent and nutritious, the Cow thrives admirably; and there is no part of Europe in which this animal grows larger, yields more milk, or fattens sooner.

In the Islands and Highlands of Scotland the breed of Oxen is very small, and the majority of them black. They are very light,

ZYLOE OX.

and traverse with great ease the boggy ground which abounds in these parts. They are said to derive their name of *Kyloe* oxen from the Islanders having to cross the *kyles* or ferries on their way to the market. Thousands of these are annually driven to market, and the ferries have frequently very strong currents through which the animals are made to swim.

The varieties produced by domestication and climate are almost innumerable: but the principal kinds in this country are thus described by Mr. Youatt. "The breeds of cattle, as they are now found in Great Britain, are almost as various as the soil of the different districts, or the fancies of the breeders. They have, however, been very conveniently classed according to the comparative size of

LONG-HORNED BULL.

the horns: the long horns originally, so far as our country is concerned, from Lancashire, much improved by Mr. Bakewell of Leicestershire, and established through the greater part of the midland counties;—the short horns, originally from East York, improved in Durham, mostly cultivated in the northern counties and in Lincolnshire, many of them found in every part of the kingdom, where the farmer attends

SHORT-HORNED BULL.

to his dairy, or a large supply of milk wanted;—and the middle horns, not derived from a mixture of the two preceding, but a distinct and valuable and handsome breed, inhabiting principally the north

SHORT-HORNED COW.

Devon, the east of Sussex, Herefordshire, Gloucestershire; and of diminished size and with somewhat different character, the cattle of the Scottish and Welsh mountains. The Alderney, with her crumpled horn

ALDERNEY COW.

found on the southern coast, and in small numbers, in gentlemen's parks and pleasure grounds every where; while the polled or hornless cattle prevail in Suffolk and Norfolk, and in Galloway, whence they were first derived. These, however, have been intermingled in every possible way. They are found pure only in their native districts, or on the estates of some opulent and spirited individuals. Each county has its

ten difficult to be described, to be traced, — neglected ed to the soil and to the ong little farmers, main- tion, and advantageously n spite of attempts at sup- nts by the intermixture or eign varieties."

pear," says Mr. Bell, "that steps were taken towards of the English breeds of n the last half century, or ey were, it is true, bred in supply the profuse hospi- ent nobility; but there is ve that any particular care ure the best breeds, or to by a particular mode of tablishment of prizes has uch as the real advantage that great interest which been taken in the breed- of cattle. The result has ment of numerous distinct some are particularly ad- articular districts."—That nt given to agricultural l by associations expressly object has been attended eficial results, cannot be regards the fattening of xhibition, we consider that ried to a most ridiculous wever, no part of *our* duty at *beauties* which are exhi- cattle-shows; nor are we se those patriots who think to the gratitude of their ding their time and money ountains of fat on the car- which, in our humble as likely to die of repletion ce the shops of aristocratic

een written on the different ut this is not the place for mparative merits of long- t-horned bulls, or whether erney cows be superior to he dairies of Somersetshire, reshire; and as for the " of the size of the carcase, of the bone, of the rival lative qualities of the hide, ur readers to consult the n elaborate works on these urpose in this book being han economical, let us pass of a variety or species of Ox l to be nearly in its pri-

which anciently inhabited ian Forest (the *Bos Scoticus* are now restricted to a few rved by noblemen at Chil- Cadzowe, near Hamilton of a bull from the first e places is preserved in the to which it was presented ankerville. This variety is Leslie: — Their colour is eamy white, muzzle black: inside of the ear, and about one-third of the outside, from the tips downwards, red; horns white with black tips, very fine and bent upwards; some of the bulls have a thin upright mane, about an inch and a half or two inches long. At the first appearance of any person they set off in full gallop, and at the distance of two or three hundred yards make a wheel round, and come boldly up again, tossing their heads in a menacing manner: on a sudden they make a full stop, at the distance of forty or fifty yards, looking wildly at the object of their surprise; but upon the least motion being made, they all again turn round and fly off with equal speed, but not to the same distance; forming a shorter circle, and again returning with a bolder and more threatening aspect than before, they approach much

WILD BULL OF THIS COUNTRY.

nearer, probably within thirty yards, when they make another stand, and again fly off; this they do several times, shortening their distance, and advancing nearer, till they come within ten yards; when most people think it prudent to leave them, not choosing to provoke them further; for there is little doubt but, in two or three turns more, they would make an attack."

WILD COW.

We might make elaborate extracts from a paper read before the British Association by Mr. Hindmarsh (in 1838), in which a good account is given of specimens preserved by the Earl of Tankerville, in his park at Chillingham; but it would occupy too much of our space to do so. We therefore refer our readers to the second volume of the Annals of Natural History, in which are some notes from Lord Tankerville himself; and we agree in his conclusion, that the same species of wild cattle prevalent in Scotland had extended to the northern districts of England; that in proportion as population and culture advanced, they became here, as in Scotland, the subjects of almost universal slaughter; and that a few of those that escaped had found sanctuary in the great wood at Chil-

probable than the former.

The Cape Ox, or Cape Buffalo. (*Bos [Bubalus] Caffer.*) This species of the Bovine genus is superior in size to the largest English Ox, is very strong and muscular, and has a most fierce and malevolent aspect. It inhabits the interior parts of Africa, north of the Cape of Good Hope, where these animals are found in large herds. Its colour is a deep cinereous brown: the hair on the body is rather short, but that on the head and breast very long, coarse, and black, hanging down the dewlap, like that of a Bison: from the hind part of the head to the middle of the back is also a loose black mane: the tail is nearly naked at the root, the remainder being covered with long loose hair. The horns are black, and extremely broad at their base; they are transversely wrinkled above, and are very large and long, spreading far over the head towards the eyes, then growing taper, and bending down on each side of the neck; the ends inclining backwards and upwards: the space between the tips is sometimes five feet. The ears are a foot long, and half-pendulous. These powerful animals are described as sometimes rushing suddenly on the African traveller, goring and trampling both man and horse under foot. The skin is excessively strong, and is, on this account, in high estimation with the colonists at the Cape, for its superior excellence in making harness, &c.

The Grunting Ox. (*Bos [Poephagus] grunniens.*) Respecting the size of this animal (which is also called the Horse-tailed Ox, or Yack) there is much dispute, some travellers describing it as smaller than the domestic breeds of Oxen, while others contend that it is much larger; but from the accounts of Russian naturalists, it appears probable that there are two varieties, differing materially in size, but in other respects corresponding. It has a short head, broad nose, and large ears: the horns are short, slender, round, upright, sharp-pointed, and bent inwards. The whole body is covered with long hair,

east of India, and although
pected by some persons to
the intermixture of the
common species, is quite
from either. [See Bison:

OX-BIRD. [See Sande

OX-PECKER. [See Be

OXYLOPHUS. A genu
best known species of whic
glandarius. [See Cuckoo.]

OYSTER. (*Ostrea edulis*
edible Mollusc, the shell o
of two unequal valves, co
by a hinge of the simplest
ternally the shell has a
appearance: each shell h
a great number of laminæ
down on each other. I
is smooth; in others stri
prickly; the lower shell
deepest. The animal itself
simple structure: no vesti
be seen; and the ligament
valves is of small size. O
valves, four rows of gills,
the *beard*, are observed a
from the fringed edge of
abductor muscle is situat
centre of the body, near w
to be distinguished; and th
seen beneath a kind of hoo
union of the two edges of
the hinge. Many curious
arisen as to whether Oysu
faculty of locomotion.
that, in general, they are fi
stones, or to each other;
stated, and generally believ
not endowed with any po
their position. This much,
that it is one of the most
Molluscs; remaining fixed
marine substance, enjoying
ment brought it by the w
scarcely a sign of life, ex
and shutting of its valves

rd substances that happen
commonly they adhere to
thus are formed the large
yster-banks. In about a
hey attain a size fit for the
re taken by dredging, and
med for the purpose, fur-
s, through which at spring
suffered to flow. In these
equire a green tinge, which
nfervæ, and other marine
on which they feed. The
lication which Oysters pos-
rful, that the *banks* or *beds*
occupy portions of the sea,
extending for miles; and
articularly along the allu-
orgia, in North America)
Oysters literally counteract
istless force of the tide.
icularly plentiful on the
d form a most important
ce. The breeding and fat-
r the London market forms
anch of business, which is
d on in Essex and Kent;
he Oysters bred there, vast
d on the coasts of Hants
they are also exceedingly
Jersey fishery, employing
eason, about 1500 men, 1000
en, and 250 boats.
ing time till about the end
rs are said to be *sick*, but
ust they become perfectly
yster fisheries are regulated
iralty: and after the month
to carry away the *cultch*,
y substance the Oysters
herwise punishable to take
een whose shells, when
will rattle.
e basis of many culinary
re much more digestible in
n after any mode of cook-
process in a great measure
he nourishing animal jelly
rge a portion of their sub-
of the Oyster is composed
ne and animal matter, and
upposed to possess peculiar
; but analysis has shown
vantage of these animal
over those from the mine-
from their containing no
metallic substance.
very entertaining object
und of microscopic inves-
clear liquid around the
inute, round, living ani-
found, whose bodies being
herical figures with tails,
place otherwise than by
ttom, being heavier than
ave been frequently seen
ming together again. In
malcules of the same kind
njoined, but swimming by
e they seemed in a more
were judged by Lewenhoek
les in the rot or melt of

ich adhere by the shell are covered at their birth with a mucilaginous liquid which attaches them to the surface of any object on which they rest. The animal strengthens this first adhesion in the same manner that it increases the size of its shell. At the mouths of several American, African, and Indian rivers, great quantities of Oysters are found attached to the roots of trees, and even to their branches, where they are so situated as to be covered by the tide. Mrs. Lee, in her 'Stories of Strange Lands,' says, "The flavour of the tree-oyster is delicious; they are small, and cover the lower branches of the mangroves. Two or three of these branches form an ample luncheon, and in the river Gaboon we had a daily supply."

OYSTER-CATCHER. (*Hæmatopus.*) A wading bird which resides on the sea shore, where it feeds on marine animals. Its feet are strong and muscular; and it both runs and flies swiftly. In the British species (*Hæmatopus ostralegus*) the head, neck, upper part of the breast, back, wings, and tip of the tail, are of a deep black; the rump, base of the tail, a transverse stripe on the wings, and the whole of the under parts of the body, of a pure white: the beak and circle round the eyes of a bright orange; the irides crimson; and the feet red. Oyster-catchers abound on the western coasts of England: feeding on limpets and oysters; and from their dexterity in procuring the latter their name is derived. It does not construct any nest; but deposits its eggs on the bare ground, above high-water mark: they are from two to four in number, of an olivaceous brown, blotched with black. During the period of incubation the male is very watchful, and upon the least alarm utters a loud scream and flies off, as does also the female, after running some distance from the place where the eggs are deposited. If taken young they may be easily reared, and will frequent the ponds and ditches during the day, keeping in company with domestic poultry. They are abundant throughout all the coasts of Europe, and other species occur on many of those of Asia and America.

PACA. (*Cœlogenys.*) A genus of Rodent animals, allied in many points to the Capybaras and Agoutis, but presenting also considerable differences, particularly in the complex structure of the molar teeth. They inhabit the woods of South America, and are generally found in the vicinity of water,

PACA.—(CŒLOGENYS BURNIJER.)

concealing themselves in burrows so near the surface that the foot of the pedestrian often breaks through. There are generally three openings to a burrow, which the animal takes care to cover with dry leaves and

markably well; and, although heavy and corpulent, they run and jump with activity. Their cry resembles the grunting of a young pig. The food of the Paca consists of fruits and tender plants, which it seeks in the night, seldom quitting its burrow in the day. Its flesh is said to be very savoury, and forms a staple article of food in many parts of South America. The mode of taking these animals is by closing two of the apertures of their burrows, and digging up the third; and it often happens that they show a very determined resistance, biting their pursuers very severely. When undisturbed, the Paca often sits up and cleans its head and whiskers with its two fore paws, which it moistens with its saliva like a cat. It is readily tamed, very cleanly, and shows a quiet and contented disposition in captivity. The fur is composed of silky hairs, very short, thin, and stiff; of a blackish-brown on all the upper parts of the body, excepting four rows of parallel spots, from the shoulders to the rump, which, viewed in some situations, appear to form an almost uninterrupted line.

PACHYDERMATA. An order of Mammiferous Quadrupeds distinguished by the thickness of their skins, including various animals that in other respects are by no means closely allied; as, for instance, the Elephant, the Horse, and the Hog. The order is, however, subdivided into — 1. The *Proboscidea;* or those possessing a prolonged snout or proboscis, and having five toes on each foot, included in a very firm horny skin; as the Elephant, and certain extinct gigantic species. 2. The *Pachydermata ordinaria;* in which the feet have four, three, or two toes on each foot. Among these are the Rhinoceros, Hippopotamus, Tapir, Wild Boar, &c. 3. The *Solidungula;* or quadrupeds with only one apparent toe and a single hoof to each foot, although beneath the skin, on each side of their metacarpus and metatarsus, there are bony points or processes which represent two lateral toes; as the Horse and its congeners.

so many living creatur
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are no signs of violence
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to another. I do not
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TILA; or WHALE BIRD. A
b-footed birds, allied to the
distinguished from them by
nostrils separate, and the beak
e base, the edges of it furnished
s with fine, pointed, vertical
ere are two species of this genus,
frequently in the seas of the
isphere. They are often called
, from their ashy-gray colour
the under parts are white.
ila vittata is very numerous in
. Capt. George Grey tells us
light much resembles that of a
same by which they are known
rs is the Whale Bird: they
ke their food upon the wing;
never seen them sit upon the
for a single second, although
ed them frequently and at all
night and day they hurry on
ne restless, rapid flight, some-
in large flocks. I never heard
ny cry or sound."

S: PAGURIDÆ. A genus and
mourous Crustacea; called also
Hermit Crabs. They are very
o both their conformation and
The tail, or post abdomen, is
, but its envelope is little else
branous bag, entirely destitute
ardness of the Crustaceous in-
d presenting no division into
The thorax itself is not very
is only on the claws, which are
that we find the true calcareous
or the protection of their soft
urida resort to various artificial
fany of them seek univalve
ch they take up their abodes;
mselves to their interior by a
which the tail is furnished at
, and also holding by its six
ch it bears at its hinder por-
they are feeding or walking,
d thorax project beyond the
e shell; but when they are
y draw themselves in, closing
ith one of the claws, which is
than the other, and holding to
o firmly, that they will rather
ler than quit their attachment.
ase in size, they are obliged to
habitation for a more commo-
nd the way in which they ac-
s is very amusing. They may
observed crawling slowly along
mpty shells, &c., left by the last
s if unwilling to part with their
ill a new one has been obtained,
r tails out of the old house into
again betaking themselves to
the latter is not found suitable.
ner they not unfrequently try
er of shells before they find one
ng. If it happens that two
stop before the same shell, a
, and the weakest yields to the
here are several species of va-
me of which may be found on
s, but the greater part belong
hores. For the most part they
feed upon dead fish, but it does not appear that they are very nice in their food, as all kinds of garbage that may be thrown on the shore are devoured by them.

Sloane, in describing the species which is most common in Jamaica, thus writes:—"This small lobster or crab differs in very little from the European soldier or hermit-crab. It hath two large forked claws like those of an ordinary lobster, one of which is bigger than the other, both rounded, more tumid, less prickly, and of a paler red than that of Europe. They fit themselves with any shell they find empty, whether it be of the land or sea, and cover themselves almost over in it, carrying it on their backs wherever they go, like a snail. It is not possible to believe how quick the land-crabs and this crab will run, upon the least appearance of danger. Till they are turned up, nothing appears but a dead shell, the mouth of which lies undermost, out of which some little part of the crab appears after it is taken up." The species we have figured as an example is the *Cenobita Diogenes* which is thus described by Cat[illegible]y:—"They crawl very fast with their she[illegible] on their back; and at the approach of danger draw themselves within the shell; and thrusting out the

DIOGENES HERMIT CRAB.
(CENOBITA DIOGENES.)

larger claw in a defensive posture, will pinch very hard whatever molests them. They frequent most those parts of the sea-shores which are covered with trees and shrub, producing various wild fruits on which they subsist; though I have seen them feed on the fragments of fish and other animal substances cast on shore. They being roasted in the shell are esteemed delicate." A great resemblance exists among all the *Paguri*, not only in their organization, but in their habits; and the species are very numerous.

PALÆOTHERIUM. A genus of extinct Pachydermatous animals, discovered (in company with *Anoplotherium*) in the gypsum beds of Paris; and of which discovery Cuvier thus speaks. "I found myself, as if placed in a charnel-house, surrounded by mutilated fragments of many hundred skeletons of more than twenty kinds of animals piled confusedly around me; the task assigned to me was to restore them all to their original position. At the voice of Comparative Anatomy, every bone and fragment

of bone resumed its place. I cannot find words to express the pleasure I experienced in seeing, when I discovered one character, how all the consequences which I predicted from it were successively confirmed. The feet accorded with the characters announced

SKELETON OF PALÆOTHERIUM (RESTORED.)

by the teeth; the teeth were in harmony with those previously indicated by the feet. The bones of the legs and thighs, and every connecting portion of the extremities, were found to be joined together, precisely as I had arranged them before my conjectures were verified by the discovery of the parts entire. Each species was, in fact, reconstructed from a single unit of its component elements." Similar deposits have also been found in the corresponding strata in the Isle of Wight. That these deposits were formed by the agency of fresh water, or that the bones which were found there were the relics of animals which, like the Rhinoceros and Tapir of the present day, frequented the borders of lakes and large rivers, by whose waters they were occasionally engulphed, there can be little doubt. The Palæotheria were characterized by having twenty-eight complex molar teeth, four canines, and twelve incisors, four in each jaw.

PALÆMONIDÆ. A family of Long-tailed Crustaceans, of which the Prawn (*Palæmon*) is the type. There are several species; among them some are extremely small, and their habits curious. As an example of this family we figure the beautifully

STENOPUS HISPIDUS.

marked STENOPUS HISPIDUS, found in the Eastern seas; when alive this species, as seen by Mr. Arthur Adams, is most delicately marked with red and blue colours, which may be loooked for in vain in the dried specimens. Many species of *Palæmonidæ* are excellent to eat; of which we may specify the Prawn. In Kalm's Travels in America we find a species of minute shrimp (*Palæmon fusci*) and a small crab (*Cancer minutus*) thus spoken of:—"Of the latter I collected eight, of the former three, all of which I put in a glass with water; the little shrimp moved as swift as an arrow round the glass, but sometimes its motion was slow, and sometimes it stood still on one side, or at the bottom of the glass. If one of the little crabs approached, it was seized by its fore paws, killed, and sucked; for which reason they were careful to avoid their fate. It was quite of the shape of a shrimp; in swimming it moved always on one side, the sides and the tail moving alternately. It was capable of putting its fore paws entirely into its mouth: its antennæ were in continual motion. Having left these little shrimps together with the crabs during night, I found in the morning all the crabs killed and eaten by the shrimps.

PALAMEDEA. The *Anhimæ* of the Brazilians. A genus of aquatic Grallatorial birds inhabiting the marshy or inundated plains in South America, somewhat resembling a swan, and as large as a swan. The head is small in proportion to the body; and the bill, which is black, not two inches long; but the most distinguishing peculiarity of this bird is a long pointed horn which grows from the fore-part of the head, and is surrounded by small black and white feathers. In the front edge of each wing also are two straight triangular spurs, about an inch long. Its claws are long and sharp, and united at the base by a membrane. Its tail is about eight inches long; and its wings, when folded, reach more than half the length of the tail. The head and neck are of a greenish-brown colour, and covered with very soft feathers; the breast, belly, and thighs are of a silvery white; and the back is black, except the upper part, which is brown with yellow spots. Its food consists of grain and aquatic herbs: and it has a loud and wild cry.

PALINURUS. A genus of long-tailed Crustacea, containing many of the largest species. It is popularly known as the sea-crawfish, or Spiny Lobster; and is distinguished by the very large size of its lateral antennæ, which are beset, like the body, with sharp points. The legs are all simple-fingered; not even the first pair being furnished with pincers. The *Palinurus vulgaris* frequents deep waters, especially of rocky shores; and is common in such situations on the British coasts, especially in the south, and on the like coasts of France. They not unfrequently weigh ten or twelve pounds each, and are in general use when in season as an article of food. There are many other fine species in the West Indies and Indian ocean.

PALLIOBRANCHIATA. The name of an order of Acephalous Mollusca; very limited, both as to the number of the existing species it includes, and the small number of these which seem to be distributed through the ocean. It includes those in which the gills are situated on the internal surface of

ed to *Arenicola*. By the 'Pro- the Zoological Society' (March 9. arn that numerous specimens of rts were presented to the British the Rev. J. B. Stair, of the Lon- nary Society, and which has been y J. E. Gray, Esq. as follows :— rical, separated into equal joints, with a small tuft of three or four the middle of each side. Head, t joint ending in a couple of ten- s globular.

e specimens, unfortunately, were short pieces, and Mr. Gray was scover any specimen with a head.

ridis, n. s. Green, with a row of k spots down the middle of the face; one spot on the middle of

Habitat. Navigator Islands.

wing is Mr. Stair's account :— the native name for a species of which is found in some parts of Navigator Islands) in the South n. They come regularly in the October and November, during two days in each month, viz. the nd the day on which the moon quarter. They appear in much aders on the second than on the their rising, and are only ob- two or three hours in the early morning of their appearance. dawn of day they may be felt swimming on the surface of the as the day advances their num- se, so that by the time the sun housands may be observed in a space, sporting merrily during night to the surface of the ocean. ed day they appear at the same a similar manner, but in such myriads that the surface of the vered with them for a consider- . On each day, after sporting or two, they disappear until the , and not one is ever observed intervening time. Sometimes, ful at one island in one month, are caught in small baskets, beautifully made, and when taken on shore are tied up in leaves in small bundles, and baked. Great quantities are eaten undressed, but either dressed or undressed are esteemed a great delicacy. Such is the desire to eat Palolo by all classes, that immediately the fishing parties reach the shore, messengers are dispatched in all directions with large quantities to parts of the island on which none appear."

PALUDINA. A genus of fluviatile Mollusca, very widely diffused in rivers and ponds, and occasionally found in salt marshes, but not in the sea. The shell is cone-shaped, varying in form from oval to globose, and having the whorls rounded; aperture roundish, angulated above; margins of the inner and outer lip united; operculum horny; shell covered by a greenish epidermis. The head of the animal is furnished with a proboscis, and two tentacula, having eyes at the base; foot somewhat triangular. The Paludinæ are viviparous.

PAMPHILA. A genus of diurnal Lepidoptera; two species of which are hereunder described.

PAMPHILA SYLVANUS; or CLOUDED SKIPPER BUTTERFLY. This well-known insect is commonly found on the borders of woods and in woody lanes, about the end of May and in July. The wings above are a bright fulvous, with the hinder margin and the nervures brown, the margin itself marked with a strong black line: the anterior wings faintly spotted with fulvous: the posterior tawny ash-colour; beneath fulvous, with the tip of the anterior wings slightly tipped with greenish, and a black patch at the base; posterior wings obscure greenish, faintly spotted with yellowish-white, with a very slender marginal line; cilia fulvous. The male has a black line on the disc of the superior wings, and the nervures and marginal streak are broader and of a deeper black than in the female; in which sex the spots are more distinct on both surfaces of the wings.

PANDORA. A well-known genus of Conchiferous Molluscs, found in the sandy shores of Europe at a considerable depth; also in the Persian Gulf and Pacific Ocean. Shell regular, inequivalve, the upper one flat, and the lower convex; an obtuse, oblong tooth in one valve, and a receptacle for it in the other; ligament internal. The foot of the animal is large and triangular. The shells are small, and pearly inside.

PANGOLIN. [See MANIS.]

PANOPEA. A genus of Conchiferous Molluscs, belonging to the *Solenidæ* family; found in the Mediterranean and Australia. The shell is large and handsome; equivalve, transverse, and gaping at both extremities; one conical tooth in each valve, and a thick callosity on the side; two oval muscular impressions, and one deep palleal impression.

PANORPIDÆ. A family of insects belonging to the order *Neuroptera*; distinguished by the front of the head (which is vertical) being produced into an elongated slender deflexed rostrum; the eyes prominent and semiglobose; the antennæ long, slender, and multi-articulate; the body moderately long and slender; the maxillæ bilobed at the extremity, membranous, and pilose; the wings of moderate and equal size, numerously reticulated, the posterior not being folded when at rest; the legs long and slender; and the tarsi five-jointed, simple, with two tibial spurs, and denticulated ungues, and a large pulvillus. The type of this family is the *Panorpa communis*, an abundant species, ordinarily known as the SCORPION-FLY (which see).

PANTHER. (*Felis Pardus.*) A feline quadruped, measuring about six feet and a half from nose to tail, which is itself about three feet long. Its colour is a bright tawny-yellow, thickly marked all over the upper parts of the body, shoulders, and thighs, with roundish black spots, disposed into circles

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retaining its fierce aspe
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nine weeks, and the youn
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PAPILIO: PAPILIO
and family of Lepidoptera
prising numerous and distil
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and the discoidal cell of the
the body small, slender,
and the proboscis short, or
This family comprises t
sub-families, namely, the
PIERIDÆ.

In the PAPILIONIDÆ the
hind wings is concave or
are very short; the club
forms an elongated mass
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with the discoidal cell ni
abdomen free. The cater
cylindrical, thickened, n
hairy, with two retractile
on the neck, in the shape
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insect throws out when a
at the same time a disagree
species of Papilionidæ are
tropical; but one has been
land, *P. machaon*. Mar
have the hind wings prod
of tails, whence they ha
name of Swallow-tails.
of their colours and large
were by Linnæus styled
flight is rapid.

The sub-family PIERID
Danaï candidi of Linnæus,
from the preceding by the

ib-family; white, orange, ng their prevailing tints. e, however, occasionally e larvæ feeding for the cabbages and other vege- ar gardens. — Such of our have additional informa- ics must consult Double- 's Genera of Diurnal Le- ey will find much valu- nd accurate description, most admirable coloured ical forms; it is a book e to any one who wishes t; in our popular sketch ould be misplaced. [See TTERFLY.]

ON, or SWALLOW-TAIL very elegant and con- is of all our indigenous ; the female, which, as male in size, frequently ent of wing considerably ches. The general colour k, powdered with yellow, bold yellow markings.

AILED BUTTERFLY, D MACHAON.)

the hinder wings is also the posterior margin of ail" projects, which may pared to the outer tail- allow — hence its name: er is an ocellated spot of or crescent of light blue; surrounded by a ring of is yellow, with two lines

OF SWALLOW-TAILED UTTERFLY.

beneath, and the back black; the antennæ and legs black. Though this species does not appear on the wing in our island till the beginning of June, and is rarely seen at all in the northern counties, it is by no means rare in the south and west of England. It is common in several parts of France and Italy, and abundant in Syria and Egypt. It flies with rapidity, and is difficult to catch. The caterpillar is smooth, green, with velvety black rings: the organ with which it is armed on the top of the neck is red; and it secretes an acrid liquor, which emits an unpleasant smell. It feeds solitarily on umbelliferous plants; and about July it changes to the chrysalis, which is greenish, with a longitudinal black band on each side.

PARADISEIDÆ, or BIRDS OF PARADISE. The genus *Paradisea*, distinguished in most species by a peculiar union of splendour and elegance, appears to be confined to the regions of Papua or New Guinea, and the small isles in the immediate vicinity; extending only a few degrees on each side the Equator. For a long time the most absurd fables and traditions were current respecting these magnificent specimens of the feathered tribes; namely, that they passed their whole existence in sailing in the air, the dew of heaven being their only food; that they were destitute of legs; that they never took rest except by suspending themselves from the branches of trees by the shafts of the two elongated feathers which form a characteristic of this beautiful race, and that they never touched the earth till the moment of their death. From such a tissue of absurdity and error the world has, however, long been free; and time has discovered that these birds have not only legs, but that they are both large and strong.

Birds of Paradise, which are allowed to exceed all others in the beauty, variety, and peculiar construction of their plumage, associate in large flocks in the delightful aromatic woods and groves of their native islands; and the inhabitants themselves, not insensible to their charms, give them the name of God's Birds. From the rapidity of their flight, as well as their being continually on the wing in pursuit of insects, their usual prey, they are sometimes called the swallows of Ternate. However, as the country where they breed is visited with tempestuous seasons, these birds are seldom seen at such times; and it is supposed that they then migrate to countries where their food is to be found in greater abundance; for, like swallows, they have their stated periods of return. There are several species of this beautiful group; but as it would be impossible to convey a perfect idea of the originals, unless we could represent their vivid and ever-changing tints, descriptions of two or three will suffice.

THE GREAT EMERALD PARADISE BIRD. (*Paradisea apoda.*) The general length of this most elegant bird, from the tip of the bill to the end of the long side-feathers, is about two feet, but to the end of the real tail about twelve inches, the size of the bird being that of a thrush. The bill is slightly bent,

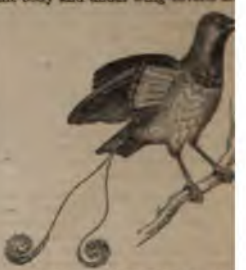
and of a greenish colour; the base being surrounded, for the distance of half an inch, with close-set, velvet-like black plumes, with a varying lustre of gold-green: the head, together with the back part of the neck, is of a pale gold-colour, the throat and fore part of the neck of the richest changeable gold-green: the whole remainder of the plumage on the body and tail is of a fine deep chestnut, except on the breast, which is of a deep purple colour. From the upper

GREAT BIRD OF PARADISE.
(PARADISEA APODA.)

part of each side of the body, beneath the wings, springs a vast assemblage of extremely long, loose, broad floating plumes, of the most delicate texture and appearance; in some specimens of a bright deep yellow, in others of a paler hue, but most of them marked by a few longitudinal dark red spots: and from the middle of the rump spring a pair of naked shafts, considerably exceeding in length even the long loose plumes of the sides. This bird is a native of the Molucca Islands and the islands around New Guinea, particularly in the Island of Aroo. Latham mentions that a specimen was once brought alive to England, and it is occasionally brought to Macao in China.

The chiefs of the countries where they are found use them in their turbans; and in many parts of the East, as well as in this country, parts of the birds are used by the fair sex as ornaments in their head-dress.

The Royal or King Paradise Bird. (*Paradisea Regia.*) This is supposed to be the smallest of all the Birds of Paradise, measuring only five inches and a half in length, without reckoning the twotail feathers, which are about six inches long. The colour of this bird on the upper parts is a most intense and beautiful red or purplish chestnut; the bill of a brownish yellow; the base, as well as the fore part of the head, being surrounded with velvet-like plumes: the throat and upper part of the breast are of a deep purple red, and across the lower part of the breast runs a broad gold-green ma rated from the red above by a line of from the green zone or crescent dow the body and under wing-coverts ar



KING BIRD OF PARADISE—MA
(PARADISEA [CICINNURUS] REG

beneath the wings, on each side the a set of feathers of a dusky brown with tips of the richest golden-gre tip separated from the brown by a b line of white. The quill feathers bright orange-brown beneath; an

KING BIRD OF PARADISE—FEMA

the upper part of the rump, over the of the tail, extend two very long shafts, each terminating, in the mo tiful manner, in a moderately bro green web, rising from one side oni shaft, and forming a flat spiral of ne convolutions. The legs are moderate and of a yellowish brown colour. T cies is called the King-bird by the and said not to associate with other the genus, but to be of a solitary feeding on berries, particularly mo of a red colour; seldom, if ever, se lofty trees, but frequenting shr bushes. M. Lesson found it all Dorey harbour in New Guinea, and h observations confirm what we hav above from a Dutch author.

The Gold-breasted Bird of Pa (*Paradisea* [*Parotia*] *sexsetacea*, beautiful deep black species is a New Guinea and Waigiou, and is we by the French *Sifilet*, from the six feathers, three on each side of the bea want webs, except at the end, wh

...ed into an oval. The breast has a rich ...ded changeable green gorget, which is very ...illiant. Our figure, which is copied from ...r work of Lesson, will show the form and

...LD-BREASTED BIRD OF PARADISE—MALE. (PARADISEA [PAROTIA] SEX BETACEA.)

...eral appearance of such specimens as are ...erved in museums. The female, which ...also figured here, wants the six long-...ailed feathers and the gorgeous breast of

...D-BREASTED BIRD OF PARADISE—FEMALE.

...male, but instead, the feathers on the ...k and side and under parts of the body ...of a very light brown colour, transversely ...ked with rather wide deep brown bars. ...is to be hoped that in a short time this, ...ll as the other superb Paradiseæ, will ...-and alive in our aviaries and Zoological ...ens.

...he SUPERB PARADISE BIRD. *Paradisea* ...phorhina] *superba.*) According to Mr. ...ter, this magnificent native of that or-...ological paradise the island of New Gui-..., is brought down to Salawat by the ...abitants, in the shape of skins dried in ...smoke, and deprived of the legs and ...gs. M. Lesson obtained his specimens ...Dumy, and from his figure the cut which ...companies this is copied. Nothing but a ...ming-bird can exceed in splendour of ...ur some parts of the breast of this bird; ...closely imbricated feathers on the throat ...breast are of a bronzed green, with iri-...ence and coruscations of violet. The crest at the base of the beak, the long feathers on the side of the neck, looking like a second pair of wings, and the brilliant

SUPERB BIRD OF PARADISE—MALE. (PARADISEA [LOPHORHINA] SUPERBA.)

deeply-notched projecting green shield on its breast, are indicated in the figure: no description can give an adequate idea of the splendour of this or any other Bird of Paradise: we must refer our readers to the cases in the British Museum, or to other collections which contain these "children of the sun."

PARANDRA. A genus of Longicorn beetles belonging to the *Prionidæ* family, the species of which, as yet, have only been found in America. Their form and general appearance will be better indicated to our readers by the accompanying figure than by any description. We may only observe that the body is parallelopiped and very glossy; that the antennæ are simple, somewhat moniliform, and rather short; that the ligula has the form of a short transverse segment of a circle, not lobed in front; and that the

PARANDRA FERRUGINEA.

penultimate joint of the tarsi is hardly bilobed. Like most of the members of this family, in the larva state they feed upon timber. There are several species found in both North and South America.

PARDALOTUS. A genus of Australian birds, which in affinity of manners and general appearance seem to be allied to the Titmice and Wrens. We give a figure of the Spotted Manakin, as characteristic of the genus, and, as an example, may allude to the PARDALOTUS AFFINIS, or STRIPED-

BANDED MANARIN. This bird inhabits Van Diemen's Land, and is the commonest of the island; wherever, indeed, the gum and wattle trees are, there may the bird be found, creeping about in the most easy and elegant manner, examining the upper and under sides of leaves for insects. It is found in

SPOTTED MANARIN.
(PARADALOTUS PUNCTATUS.)

the gardens and shrubberies even in towns; where its sprightly action, and piping though monotonous note, are thought pleasing. It breeds in September and four following months, and has two or three broods in a year. The nest is of a round domed shape, like that of a Wren, with a small hole for an entrance: it is outwardly composed of grasses, and warmly lined with feathers.

PARMOPHORUS, or DUCK'S BILL LIMPET. A genus of Mollusca, found in New Holland and New Zealand; the shell of which is oblong, slightly depressed, and convex on the outside; the interior exhibiting very strong muscular impressions, which in some species are marked with a blood red colour. The head of the animal is rather indistinct, with two tentacula, having eyes at the base; foot very large.

PARNASSIUS. A very beautiful genus of Butterflies found on mountains in Europe and Asia, and lately ascertained by the most

APOLLO BUTTERFLY.
(PARNASSIUS APOLLO.)

profound Lepidopterist of this country, Mr. Edw. Doubleday, to be indigenous to North America, on the Rocky Mountains. The best known species, which is here figured, is the Apollo Butterfly (*Parnassius Apollo*), found in Norway, Sweden, and Switzerland. It is white, with various black markings; and these colours, with the beautiful crimson spots on the wings and the elegant shape of this pretty species, combine to make a most pleasing object to look at. The species has been reported to be found in Scot the statement does not rest on goo rity.

PAROQUET, or PARRAKEET. ornis.) A distinctive appellation fo of birds belonging to the Psitta Parrot tribe, which are smaller t common Parrots, and have long There are numerous species; some guished by a very long pointed collar-like mark round the neck, w habit the Asiatic continent and and others, natives of Australia, w distinguished by their colours being ously variegated, and peculiarly ma the back; by their tail-feathers b pointed; and by their being furnish elongated tarsi, adapted for running ground. [See PEZOPORUS; PLATE

The RING PAROQUET. (*Palaeorn torquatus.*) This beautiful species, no markable for its symmetrical form an ful movements, than for its docility tative powers, is supposed to have first bird of the parrot kind known ancient Greeks and Romans, have brought from the island of Ceylon, Indian expeditions of Alexander th They afterwards obtained other spe Africa.—The size of the Alexandrine Paroquet is that of a common pig general length about fifteen inches colour an elegant bright green above, yellower beneath; across each sho the smaller coverts, is a longitudinal red patch or spot; and from the ba

ROSE-RINGED PARRAKEET.
(PALÆORNIS TORQUATUS.)

lower mandible, on each side, pro moderately broad black band or which, after descending a little way backwards so as almost to encircle t growing very narrow as it approac back part, which is marked by a ro near half an inch wide, but narrow passes forwards immediately beno black one, almost reaching the fron neck: the back part of the head,

enus of Grallatorial birds, ch have very long toes, which upport themselves on aqua- are often named Jacanas, iefly in the warm parts of and Asia. We may par- Gallinacea, a species in- ia, one of the most typical enus; its hind toe and claw developed as to expressly ering those floating leaves merely rise to the level of the id thus describes it:—Back down the back of the neck, ders, under surface of the a broad band crossing the n, deep bluish-black; chin orbits, ear-coverts, sides breast, pale glossy orange, orange gradually blending ack and scapularies bronzy ning nearly black at the and on the rump; wing- ws; the remainder of the greenish black; vent and s buffy white; irides light eyelash light ash-gray; bill the extreme tip, then black s; the basal portion of the nd the helmet aurora-red; mandible light primrose- rt of the tibia red, with a s of yellow and greenish- rt of the tibia, tarsi, and sh-gray. Their powers of maining under water are , but their powers of flight . At the slightest alarm t once or take to flight.

Psittacidæ.) The Parrot numerous and splendid one; d, chiefly according to the d tail, into several groups; ckatoos, Lories, Paroquets, ch inserted in their alpha- der the word Psittacidæ few general observations

and appears to have been one of the earliest imported species from Africa, in many parts of which it is common. It is about the size of a small pigeon, and in length about twelve inches. Its colour is an elegant ash-gray, deeper on the upper parts, and more inclining to white beneath; the whole, though of a sober colour, having a very elegant appearance, from the deeper and lighter undulations formed by the edges of the feathers, as well as from a kind of efflorescence resembling fine powder, which, in a healthy state, is perpetually diffused over the plumage. The whole tail is of the brightest crimson; the temples or orbits of the eyes bare and white; the bill black, and the legs cinereous. It is extremely long-lived; there are well-recorded instances of their having attained the age of seventy years; and some authors speak positively of individuals living to the age of 100. The surprising facility with which they repeat sentences has been often noticed; sometimes too ludicrously apposite, we should imagine, to obtain perfect credence. It was one of this species to which the memorable anecdote, first related by Gesner, and often referred to by succeeding writers, refers: "A Parrot belonging to King Henry VIII., who then resided at Westminster, in his palace by the river Thames, had picked up many words from hearing the passengers talk as they happened to take water. One day, sporting on its perch, the poor bird fell into the river; and then very seasonably remembering the words it had often heard some, whether in danger or in jest, use, cried out amain, 'A boat! a boat! twenty pound for a boat!' A waterman, who happened to be near, hearing the cry, made to the place where the Parrot was floating, and knowing to whom it belonged, restored it to its royal master, in the full expectation, as the bird was a great favourite, of receiving the promised reward. The king, however, preferred appealing to the Parrot himself to determine the sum, which being consented to by the boatman, the bird immediately cried out, 'Give the knave a groat!'"

ing ones green with yellow tips: the bill pale, and the legs and feet dusky.

The Amazon Parrot. (*Psittacus Amazonius.*) There are several varieties found on each side of a great extent of the river Amazon to whom the general appellation of *Amazonian* Parrots is given. Their usual length is about fourteen inches; the bills varying in colour: the irides yellow or orange; and the plumage bright green, with the feathers marked by dusky or blackish margins: the tops or edges of the shoulders, and a conspicuous patch on the middle of the wings, bright red; the red wing patch is usually bounded by shades of blue, green, and yellow, which colours are only completely visible in the expanded state of the wings: the tail-feathers are green, but appear red beneath the base when expanded. A bright blue band generally reaches from eye to eye, beyond which the feathers of the crown, cheeks, and throat are of a jonquil yellow: the legs and feet are either dusky or of a pale grayish brown. The species we have selected for description corresponds in its main features with what we have above stated; and, that the general colour of the plumage is a bright and beautiful green, deepest on the back and wings, and lighter beneath, a yellowish garter encircling the bottom of the thighs. The smallest of the wing-coverts, forming the ridge of the shoulders, are of a splendid red colour; the larger wing-feathers are externally of a deep blue with a cast of violet; the middle ones of the same colour at their tips, but red on their outward edges. The tail is deep green above, and yellowish beneath, and has some red on the upper part of each feather, which, however, is not seen when the tail is closed: the bill is dark brown, and the legs light gray. The Amazon Parrot abounds in Guiana and Surinam, where it causes great injury to the plantations. It builds in the midst of impenetrable forests, the female laying four white eggs in the hollow of a tree.

Carolina Parrot. (*Psittacus Carolinensis.*) The only species found native in the United States is the Carolina or Illinois Parrot, which is resident from the Gulf of Mexico to the neighbourhood of Lake Michigan, and on the east of the Alleghanies to Maryland. Their favourite food is the seeds of the cockle-bur, which grows in great abundance along the shores of the Mississippi and the Ohio; where they are seen in large flocks, screaming round the salt-licks. They are very sociable in their dispositions, extremely fond of each other, and showing the greatest grief for the loss of their companions. The plumage is very beautiful, the general colour being a bright yellowish silky green, with light blue reflections.

Wilson's American Ornithology furnishes us with the following particulars of this bird:—"In descending the river Ohio, by myself, in the month of February, I met with the first flock of paroquets, at the mouth of the Little Sioto. I had been informed, by an old and respectable inhabitant of Marietta, that they were sometimes, though rarely, seen there. I observed flocks of them, afterwards, at the [illegible] Great and Little Miami, and [illegible] bourhood of numerous creeks [illegible] themselves into the Ohio. At [illegible] thirty miles above the mouth [illegible] river, I saw them in great [illegible]

CAROLINA PARROT
(PSITTACUS CAROLINENSIS)

came screaming through the [illegible] morning, about an hour aft[illegible] drink the salt water, of which [illegible] as the pigeons, are remarkably [illegible] they alighted on the ground, [illegible] a distance as if covered with a [illegible] richest green, orange, and yell[illegible] wards settled, in one body, on a [illegible] tree, which stood detached fr[illegible] covering almost every twig of [illegible] shining strongly on their g[illegible] plumage, produced a very [illegible] splendid appearance. Here I [illegible] tunity of observing some v[illegible] traits of their character; havi[illegible] a number, some of which were [illegible] the whole flock swept repea[illegible] their prostrate companions, a[illegible] on a low tree, within twenty [illegible] spot where I stood. At each [illegible] charge, though showers of [illegible] the affection of the survivors [illegible] to increase; for, after a few [illegible] the place, they again alight[illegible] looking down on their slau[illegible] panions with such manifest [illegible] sympathy and concern, as cou[illegible] me. I could not but take not[illegible] markable contrast between [illegible] manner of flight, and their h[illegible] gait among the branches. T[illegible] much like the wild pigeon, in [illegible] bodies, and with great rapidi[illegible] loud and outrageous screamin[illegible] that of the red-headed woodp[illegible] flight is sometimes in a direct l[illegible] usually circuitous, making a [illegible] of elegant and easy serpentine [illegible] if for pleasure. They are pa[illegible] tached to the large sycamores, [illegible] of the trunks and branches o[illegible] generally roost, thirty or fort[illegible] times more, entering at the sam[illegible]

o the sides of the tree, e claws and also by the to be fond of sleep, and r holes during the day. eir regular *siesta*. They ble with and fond of each ing each other's heads ays, at night, nestling as each other, preferring, at ndicular position, sup- and claws. In the fall, ite cockle-burs are ripe, he coast, or high grounds here New Orleans, for a ch times, they are killed by of the inhabitants; I think their flesh very several times dined on n the woods: but found with all the sauce of a commend it.

or Illinois parrot (for it under both these appel- inches long, and twenty- head and cheeks, orange for an inch and a half, e neck, a rich and pure nd bend of the wing, also range red. The general the plumage is a bright en, with light blue re- and most diluted with ater wing-coverts and es, yellow, slightly tinged r webs of the primaries, , almost black, exterior ; tail, long, cuneiform, e feathers, the exterior length, the others in- middle ones, which are middle with light blue; ger feathers, and of most umage, black; knees and w; feet, a pale whitish , black; bill, white, or pale cream; iris of the the eye is a small space overed with a whitish d in an elevated mem- of the bill, and covered , wholly bare of feathers, ose descending on each e of the palate hangs a dackish colour; tongue, nside of the upper man- grooved exactly like a old with more security. ery little in her colours n the male. After ex- specimens, the following nctpal differences. The of the female does not r; the interior vanes of ownish, instead of black, on the bend and edges siderably narrower; in olours and markings are

(*Scarus.*) This fish ob- the peculiar hooked con- uth, or the brilliancy of haps fra.: both. It has large, convex, rounded jaws, covered with hard, scale-like teeth, which succeed each other from the rear to the front in such a manner, that the bases of the newest form a cutting edge. It is about a foot long; the colour is greenish, variegated near the head with yellow; the fins are blue, and the scales are very large. Numerous species of this genus inhabit tropical seas, some of them being remarkably brilliant; but they are mostly noticeable for the immense strength of their jaws and teeth enabling them to browse without difficulty on the newest layers of the stony corals, digesting the animal matter therein contained, and setting free the carbonate of lime in a chalky state. The flesh of the Parrot-fish is firm and well-tasted.

PARTHENOPE. A remarkable genus of short-tailed Crustacea, the rugosities on the back of the best known species of which give the crab the appearance of a piece of rock eroded by the sea; this species is the *P. horrida*, and is found in the Indian ocean.

PARTRIDGE. (*Perdix cinerea.*) This well-known bird is about thirteen inches in length. The general colour of its plumage is brown and ash, beautifully mixed with black, and each feather streaked down the middle with buff: the upper part of the neck is transversely varied with dusky gray, and a tinge of red: the sides of the head are tawny; under each eye is a small saffron-coloured spot, which has a granulated appearance, and between the eye and the ear a naked skin of bright scarlet, which is not very conspicuous but in old birds: the under part of the neck and breast are bluish gray, marked with transverse black lines, and

COMMON PARTRIDGE
(PERDIX CINEREUS.)

sprinkled with small reddish spots: on the lower part of the breast is a rich gorget of deep chestnut, in form of a horse-shoe: the tail is short and drooping; the legs are greenish white, and furnished with a small knob behind. The female has no crescent on the breast; and her colours in general are not so distinct and bright as those of the male. Partridges pair early in the spring;

the female lays from fourteen to eighteen or twenty eggs, of a greenish colour, making her nest of withered leaves and grass upon the ground. The young birds run as soon as hatched, frequently encumbered with part of the shell. The affection of the Partridge for her young is peculiarly strong; and she is greatly assisted by her mate in the care of rearing them: they lead them out in common, call them together, gather for them their proper food, and assist in finding it by scratching the ground—at first furnishing them with the larvæ of ants, on which they principally feed while very young. It is no unusual thing to introduce Partridges' eggs under the domestic hen, who watches and rears them as her own; in which case the young birds require to be fed with ants' eggs, which are their favourite food, and without which it is almost impossible to bring them up. Care should be taken to supply them well with fresh water: it is also recommended to give them a mixture of wood-lice and earwigs: and occasionally fresh curds, mixed with lettuce, chickweed, or groundsel. They likewise eat insects, and when full grown, all kinds of grain and young plants.

Whenever a dog or other formidable animal approaches the nest of a Partridge, the hen practises every art to allure him from the site: she keeps at a little distance before him, feigning to be incapable of flight, and just hopping up and falling down before him, but never advancing to such a distance as to discourage her pursuer: at length, having successfully misled him, she at once takes wing and disappears. The danger being over, and the dog withdrawn, she returns and finds her scattered brood, who immediately assemble at her call, and follow her. Corn fields are the places that Partridges most delight in, especially while the corn is growing; for that is a safe retreat, where they remain undisturbed, and under which they usually breed. They frequent the same fields after the corn is cut down, but with a different intent; for they then feed on such corn as has dropped from the ears; and find a sufficient shelter under cover of the stalks, especially in wheat stubble. When the winter comes on, and the stubble fields are trodden down or ploughed up, they sometimes retire to the upland meadows, where they lodge in the high grass and among rushes: they also sometimes resort to the low coppice-woods, especially if they are contiguous to corn lands. The eggs of these birds are frequently destroyed by weasels, foxes, &c., but still they are in general sufficiently numerous to furnish the sportsman with employment enough in the "shooting season." The sexual ardour of the male has been the theme of many writers on natural history; and there are instances out of number in which the parental solicitude of the female has justly called forth their eulogistic admiration. Partridges are found throughout nearly the whole of Europe, and nowhere in greater plenty than in this island, the north of France, Holland, and Germany.

The Red-legged Partridge. (Perdix rufus.) A very beautiful and delicate bird, common in Barbary and while it has been introd and other parts of Engl a fine scarlet colour; th is a bright chestnut, bec as it reaches the back p ring round the neck, bea small white spots. The and throat are of a light which gradually changes

RED-LEGGED PA (PERDIX RU

faint rose-colour: the b tail-coverts are light brow of the neck, back, and wi ish hue; the prime quills tipped with a light yellow and the scapulars are a bri with a dark red. The with beautiful feathers, riegated; the tips are occ there are bars of black, wi of white; the rump is a middle feathers of the tail and transversely barred; of the tail are ash colour b and their upper parts of a d legs and feet are red; a brown.—In South Amer Partridge is applied to spe Tinamus (which see).

The Partridge Ban Geophaps.]

PARUS. A genus of Co birds; characterised by straight, and rather slend at its base, and a strong with a long hooked claw. little birds, continually t to spray, suspending them of attitudes, reading apart t they feed, devouring insects their nests in the holes of t provisions of grain. [See T

PASAN. A species of Eg

PASSENGER PIGEON. topistes] migratorius.) This America most prolifically; b can scarcely be conceived w account given of them by t Wilson, the celebrated Ame gist. The Passenger Pigeon slate-colour, white underne and accuminated; the thr sides viscous; tail, of twe two middle ones black, t whitish; bill black; iris w

bit purplish-red. The female
er breast of a cinereous brown.
visit the states in prodigious
are more abundant in the
s, where they breed, and which
ch mast, their favourite food.

ASSENGER PIGEON.
[ECTOPISTES] MIGRATORIA.)

ing-places are always in the
metimes occupy a large extent
ces they have frequented one
for some time, the appearance
surprising. The ground is
depth of several inches with
ll the tender grass and under-
ed; the surface strewed with
f trees, broken down by the
birds collecting one above ano-
trees themselves, for thousands
ed as completely as if girdled
The marks of their desolation
many years on the spot; and
ns could be pointed out where,
ears after, scarcely a single
e its appearance. When these
d discovered, the inhabitants,
hbis distances, visit them in
guns, clubs, long poles, pots
d various other engines of de-
a few hours they fill many
ad horses with them. By the
ost-roost or breeding-place is
important source of national
enience for that season, and
ingenuity is exercised on the
the western countries, viz. the
Kentucky, and Indiana, these
in back woods, and often ex-
y a straight line across the
great way. Not far from Shel-
state of Kentucky, about five
e was one of these breeding-
stretched through the woods
rth and south direction, was
in breadth, and was said to
forty miles in extent. In this
every tree was furnished with
e the branches could accom-
The Pigeons made their first
ere about the 10th of April,
gether with their young before
y. As soon as the young were
fully grown, and before they left the nests, numerous parties of the inhabitants, from all parts of the adjacent country, came with waggons, axes, beds, cooking utensils, many of them accompanied by the greater part of their families, and encamped for several days at this immense nursery. Several of them informed me that the noise was so great as to terrify their horses, and that it was difficult for one person to hear another speak without bawling in his ear. The ground was strewed with broken limbs of trees, eggs, and young squab pigeons, which had been precipitated from above, and on which herds of Hogs were fattening. Hawks, Buzzards, and Eagles were sailing about in great numbers, and seizing the squabs from the nest at pleasure, while, from twenty feet upwards to the top of the trees, the view through the woods presented a perpetual tumult of crowding and fluttering Pigeons, their wings roaring like thunder, mingled with the frequent crash of falling timber; for now the axe-men were at work, cutting down those trees that seemed to be most crowded with nests, and contrived to fell them in such a manner, that in their descent they might bring down several others; by which means the falling of one large tree sometimes produced 200 squabs, little inferior in size to the old ones, and almost one heap of fat. On some single trees, upwards of 100 nests were found, each containing one squab only; a circumstance in the history of this bird not generally known to naturalists. It was dangerous to walk under these flying and fluttering millions, from the frequent fall of large branches, broken down by the weight of the multitudes above, and which, in their descent, often destroyed numbers of the birds themselves; while the clothes of those engaged in traversing the woods were completely covered with the excrements of Pigeons.

"These circumstances were related to me by many of the most respectable part of the community in that quarter, and were confirmed in part by what I myself witnessed. I passed for several miles through this same breeding-place, where every tree was spotted with nests, the remains of those above described. In many instances I counted upwards of ninety nests on a single tree; but the Pigeons had abandoned this place for another, sixty or eighty miles off, towards Green River, where they were said at that time to be equally numerous. From the great numbers that were constantly passing over our heads, to or from that quarter, I had no doubt of the truth of this statement. The mast had been chiefly consumed in Kentucky; and the Pigeons, every morning a little before sunrise, set out for the Indiana territory, the nearest part of which was about sixty miles distant. Many of these returned before ten o'clock, and the great body generally appeared on their return a little after noon. I had left the public road to visit the

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would naturally infer from this, that Pigeons hatches a single young one; but Mr. Audubon observes, that as is the case with the rest of the genus, each brood generally consists of a male and a female. Every other part of Wilson's account he confirms.

remains of the breeding-place near Shelbyville, and was traversing the woods with my gun, on my way to Frankfort, when, about ten o'clock, the Pigeons which I had observed flying the greater part of the morning northerly, began to return in such immense numbers as I had never before witnessed. Coming to an opening by the side of a creek called the Benson, where I had a more uninterrupted view, I was astonished at their appearance: they were flying with great steadiness and rapidity, at a height beyond gunshot, in several strata deep, and so close together that, could shot have reached them, one discharge could not have failed of bringing down several individuals. From right to left, as far as the eye could reach, the breadth of this vast procession extended, spanning every where equally crowded. Curious to determine how long this appearance would continue, I took out my watch to note the time, and sat down to observe them. It was then half-past one; I sat for more than an hour, but instead of a diminution of this prodigious procession, it seemed rather to increase both in numbers and rapidity; and, anxious to reach Frankfort before night, I rose and went on. About four o'clock in the afternoon, I crossed Kentucky river, at the town of Frankfort, at which time the living torrent above my head seemed as numerous and as extensive as ever. Long after this I observed them in large bodies, all moving in the same south-east direction, till after six o'clock in the evening. The great breadth of front which this mighty multitude preserved would seem to intimate a corresponding breadth of their breeding-place, which, by several gentlemen who had lately passed through part of it, was stated to be at several miles."

Having endeavoured to make a rough calculation of the numbers composing this mass, he believes that, at the lowest estimate, there were 2,230,272,000 Pigeons; that they extended full 240 miles in length; and allowing each bird to consume half a pint of food daily, it would amount to 17,824,000 bushels per day!

PASSERINÆ, or PASSERINE BIRDS. The name of a most extensive and varied order of birds, which feed on insects, fruit, or grain, according to the slenderness or strength of their beak. They have all short and slender legs, with three toes before and one behind; the two external toes being united by a very short membrane; all the toes are slender, flexible, and moderately elongated, with long, pointed, and slightly curved claws. [See INSESSORES.]

PATELLA. [See LIMPET.]

PAUSSIDÆ. A family of Coleopterous insects, the various species of which are small in size, varying from a quarter to half an inch in length; but containing amongst them some of most remarkable form. The body is of a firm consistence, and of an oblong, quadrate, subdepressed form, narrowed in front; the head small, and generally narrowed behind into a neck; the antennæ, which are the most singular parts of these insects, are of a very large size, composed of two or more joints, of a very irregular construction; the elytra are broader than the

GIGANTIC BOMBARDIER AND ANTENNÆ.
(PATROCLUS BUFFONIUS.)

rest of the body; the legs short, strong, and compressed. These extraordinary insects appear almost exclusively to inhabit the Old World; but lately a species has been described which was found by Mr. Mare, the eminent traveller and botanist, in South America. They are rare, and little is known of their habits; but they are believed to be nocturnal, and are said to copy the habits of the Bombardier Beetles (*Brachinidæ*), which recent dissections have shown that in other respects they are not very distantly removed from that tribe. They are found about the roots of ants; and those who are desirous of studying the many curious species of these insects must consult the monographs of them given by Mr. Westwood in the Linnean Transactions, in the Arcana Entomologica, and in the Transactions of the Entomological Society of London.

PAVONIA. A genus of Zoophytes, containing many foliated species of great beauty; specimens of which may be seen in the fine collection at the British Museum. Our figure

PAVONIA LACTUCA WITH POLYPES IN NATURAL POSITION.

represents a portion of a specimen of the *Pavonia lactuca*, or *Lettuce Coral*, in which the Zoophyte as well as the Polypidom are exhibited. It is copied from one of the finely illustrated recently published French works.

PEACOCK. (Pisan.) A genus of gallinaceous birds, of which two species are remarkable, viz. the Common Peacock, and

Peacock. The COMMON PEA- *cristatus*) is universally well , as Buffon truly says, "its match- ge seems to combine all that de- ye in the soft and delicate tints flowers, all that dazzles it in g lustre of the gems, and all that it in the grand display of the

PEACOCK.—(PAVO CRISTATUS.)

Though long naturalized in Eu- Eastern origin, occurring in the fusion in the neighbourhood of and in the extensive plains of ingdom of Siam, &c. As early of Solomon they were imported by the fleets which that monarch the Red Sea. From India they t into Greece about the time of and towards the decline of the ublic they were introduced into were esteemed as one of the uries of the table. They are wild in many parts of Asia and more particularly in the fertile ndia, where they attain a great hibit colours which seem to vie ttering gems and precious stones these luxurious regions. Of the d when it was introduced into have no authentic record; but on good authority that it long of the dishes in the second course eat feast; being usually baked de in the form of the bird, with ised above the crust, the beak and the tail expanded. In the ivalry it was common for the make their vows of enterprise at ast, on the presentation to each tura, of a *roasted peacock in a*

ary length of the Peacock, from the tip of the bill to that of the tail, is about four feet. Its finely-shaped head is adorned with a tuft, consisting of twenty-four feathers, whose slender shafts are furnished with webs only at the ends, painted with the most exquisite green, edged with gold: the head, throat, neck, and breast are of a deep blue, glossed with green and gold; the back of the same, tinged with bronze; the scapulars and smaller wing-coverts, reddish cream colour, variegated with black; the middle coverts deep blue, glossed with green and gold; and the belly and vent are dusky, with a greenish hue. The tail, which is of a gray-brown, is hidden beneath that which constitutes the distinguishing character of this beautiful bird—its magnificent *train*, which rises above it, and, when expanded, forms a superb fan of the most resplendent hues: the shafts are white, and are furnished from their origin, nearly to the end, with divided irridescent barbs; at the extremity of these feathers the barbs unite, and form a flat extended vane, decorated with what is called "the eye." This is a brilliant spot, or circlet, enamelled with the most enchanting colours; yellow, gilded with various shades; green, running into blue and bright violet, varying according to its different positions; the whole receiving additional lustre from the colour of the centre, which is a fine velvet black. "When pleased or delighted, and in the sight of his females, the Peacock erects his train, and displays the majesty of his beauty: all his movements are full of dignity; his head and neck bend nobly back, his pace is slow and solemn, and he frequently turns slowly and gracefully round, as if to catch the sunbeams in every direction and produce new colours of inconceivable richness."—These gorgeous plumes, however, whose versatile hues he has so often displayed with all the pride of conscious superiority, are shed every year; and then, as if sensible of his loss, he seeks the most obscure retreats to conceal himself, till the returning spring restores him to his accustomed beauty. The cry of the Peacock, especially on a summer evening and at night, is often repeated, and his loud and discordant screams are generally considered as the sure prognostic of bad weather. The legs are gray-brown, those of the male being furnished with a strong spur; and the feet are clumsy in the extreme.

The female (called the Pea-hen) is rather less than the male; and her train is not only very short, but destitute of those dazzling colours by which he is distinguished: her whole plumage, in fact, partakes of a light brown or cinereous hue. She seldom lays more than four or five eggs at a time, and always chooses some sequestered or secret spot, where she can conceal them from the male, who is apt to break them. The eggs are white and spotted; and she sits from twenty-five to thirty days, according to the temperature of the climate or the warmth of the season. The young birds do not acquire their perfect brilliancy till the third year. Occasionally the Peacock has the whole of the plumage of a pure white colour, the eyes of the train not excepted, but they

RADCLIFFE.

may be traced by a different undulation of shade upon that part. There is also a variegated or mixed breed, between the common and the white variety; in which every proportion of colour between the two is at different times observed. Sometimes the female assumes the plumage of the male, which is said to take place only after she has done laying; but instances of this, we believe, are very rare.—The Peacock formerly graced the tables of the magnates of the land, and was served up with the feathers of the neck and tail preserved: its flesh, however, is far less delicious than that of the turkey, and it now rarely appears on the festive board.

In size and proportions the two species are nearly similar, but the crest of *Pavo Javanicus* is much longer than that of *P. cristatus*, and the feathers of which it is composed are regularly barbed from the base upwards in the adult bird, and of equal breadth throughout. Head and crest interchangeably blue and green. A naked space on the cheeks, including the eyes and ears, is coloured of a

JAVANESE PEACOCK.
(PAVO JAVANICUS.)

light yellow behind, and bluish-green towards its fore part. The feathers of the neck and breast, which are broad, short, rounded, and imbricated like the scales of a fish, are at their base of the same brilliant hue as the head, and have a broad, lighter, somewhat metallic margin; those of the back have still more of the metallic lustre. The wing-coverts have a deeper tinge of blue. The tail-feathers and their coverts (the train) are of a splendid metallic brown, changing into green; their barbs very long, loose, and silky; and the latter are almost all terminated by ocellated spots similar to those which mark the train of the common species, and of nearly the same size. Like it, also, they are of a beautiful deep purple in the centre, which is surrounded by a band of green, becoming narrow behind, but widening in front and filling up a kind of notch that occurs in the blue; then comes a broad brownish band; and lastly, a narrow black ring, edged with chestnut, all beautifully iridescent. Bill of a grayish horn-colour; iris deep hazel. Legs strong, naked, reticulated, dusky black.

The beauty of the Peacock's plumage was a theme of admiration in the remote and the bird was sought after as adding splendour to the magnific Solomon. The chief display of this arises from that arrangement of its gorgeous feathers which spring fr space between the region behind th and the origin of the tail; but the this to the bird itself has been a m doubt. At first sight it seems to be than a luxuriance of nature, and as brance rather than a benefit. The by which their splendour is outspre also been deemed an absurd manifes of pride. But men are imperfect inter of the actions of animals; and a close mination of the habits of this bird a different explanation.

PEACOCK [BUTTERFLY]. A given by insect collectors to Butter the species *Vanessa Jo*.

PEARL [MOTHS]. A name gi collectors to Moths of the genus *Mar*

PEARL OYSTER. (*Avicula M tifera.*) A bivalve Mollusc, celebrated valuable nacreous substance, called *of-pearl*, with which the inside of th is lined, but still more for the little lar, oval, or pear-shaped concretions *pearls*, which are sometimes found f detached within the lobes of the m They are thus described by an eminent chologist: "Pearls are small nacreous that become formed and hardened the body of the animal; they are fou posited in the most fleshy parts, partic within and around the adductor muscl are said to be occasioned by the over of those glands whose function it is to the nacreous fluid destined for the l lining of the shell. When the sec thus diseased, this beautiful irridescen

PEARL-OYSTER.—(AVICULA MARGARITI

is very irregularly discharged, bein deposited upon the inner surface of th in little excrescences: these are att tached, and form articles of comme pearls of inferior value, the former considered more precious, both on a of their rotundity of form and the cl and beauty of their complexion."—*Con. Sys.*

From an interesting article on Pea Pearl Fisheries, by Dr. Baird (in Chan Miscellany, No. 167.), we glean the f ing:—"Substances so unlike the or tion of the shells in which they are mon, naturally give rise to speculati specting their origin; and thus we

r and temperate, open their
e above the water, and most
ow the dew of heaven; and
ure and quantity of the dew
llow, they conceive and breed
'hese mussels,' he continues,
dingly quick of touch and
however faint the noise that
on the bank beside them, or
the stone that may be thrown
r, they sink at once to the
ng well in what estimation
ir womb is to all people." In
elief is equally common that
gems are

'Rain from the sky,
into pearls as it falls in the sea.'

oesy and romance! the sci-
istry — which has, with its
r of matter-of-fact, converted
a diamond into vulgar char-
so pronounced the precious
mposed of 'concentric layers
nd carbonate of lime!' Ad-
mposition, the question still
the cause of a substance so
appearance to the shell in
s, and why it should be pre-
ells, and absent in others.
, it appears that the ultimate
imal's forming this beautiful
get rid of a source of irrita-
ues this happens to be a grain
me such small foreign body,
sinuated itself between the
e oyster and the shell, and
a great annoyance, the ani-
h a smooth coat of membrane,
spreads a layer of nacre. At
is caused by some enemy of
of the shell perforating it
de to get within reach of its
ning of this same matter, the

actly the appearance of seed-pearls, as they are called. Sometimes he found these bodies connected with the surface of the shell, in contact with the membrane covering it. In further examining into the structure of pearls, he ascertained that all split pearls upon which he could lay his hands universally possessed a small central cell, which surprised him by its extreme brightness of polish; and in comparing the size of this cell with that of the ovum when ready to drop off from its pedicle, he found it sufficiently large to enclose it. He came thus to the conclusion that these abortive eggs are the commencement or nuclei of the pearl. Being once formed, the animal continues to increase its size by the addition of fresh coats, adding, it is said, a fresh layer every year. It is extremely probable, however, that its presence being still a source of irritation to the creature, the nacral covering is more rapidly deposited upon the pearl than upon the shell itself. Those pearls found in the substance of the animal are generally round, but occasionally we find them of a pyramidal form, the pedicle by which the egg is attached appearing to have received a coat of nacre as well as itself. People conversant with the pearl-fishery assert that they do not appear till the animal has reached its fourth year, and that it takes from seven to nine years for the oyster to reach maturity.

"The true pearl is remarkable, as is well known, for its beautiful lustre — a lustre which cannot altogether be given to artificial ones. According to Sir Everard Home, this peculiar lustre arises from the central cell, which is lined with a highly-polished coat of nacre; and the substance of the pearl itself being diaphanous, the rays of light easily pervade it. Previous to Sir Everard's theory, it was supposed by opticians that the peculiar splendour was the effect of

tion of the grooves,' says Sir David, 'is in every case at right angles to the line joining the common image and the coloured image; hence in irregularly-formed mother-of-pearl, where the grooves are often circular, and have every possible direction, the coloured images appear irregularly scattered round the ordinary image. In the real pearl these coloured images are crowded into a small space round the common image, partly on account of the spherical form of the pearl; and the various hues are thus blended into a white uniformed light, which gives to this substance its high value as an ornament.' Pearls, however, at least the most valuable, are not perfectly solid, and are certainly translucent. In fact, in a split pearl we find the transparency to be considerable. 'Upon taking a split pearl,' says Sir Everard Home, 'and putting a candle behind the cell, the surface of the pearl became immediately illuminated; and upon mounting one with coloured foil behind the cell, and by putting a candle behind the foil, the outer convex surface became universally of a beautiful pink colour.' If we take a split pearl and set it in a ring with the divided surface outwards, and look at this through a magnifying glass, this central cell becomes very conspicuous, and the different layers of which the pearl is composed are also beautifully displayed. It is the brilliancy above described that distinguishes the real from the factitious pearl—a lustre which no art can altogether give, though often attempted with considerable success."

Much valuable information on the subject of pearls and pearl fisheries is also given in Mr. M'Culloch's Commercial Dictionary, to which work we are indebted for most of the following particulars. Pearls should be chosen round, of a bright translucent silvery whiteness, free from stains and roughness. Having these qualities, the largest are of course the most valuable. The larger ones have frequently the shape of a pear; and when these are otherwise perfect, they are in great demand for ear-rings. Pearls were in the highest possible estimation in ancient Rome; but, owing partly to the changes of manners and fashions, and still more, probably, from the admirable imitations that may be obtained at a very low price, they are now less esteemed, and comparatively cheap. When the pearls dwindle to the size of small shot, they are denominated *seed* pearls, and are of little value. One of the most remarkable pearls of which we have any authentic account was bought by Tavernier, at Catifa, in Arabia, a fishery famous in the days of Pliny, for the enormous sum of 110,000*l.*! It is pear-shaped, regular, and without blemish. The diameter is ·63 inch at the largest part, and the length from two to three inches.—Very good imitations of pearls have been made with hollow glass globules, the inside of which is covered with a liquid called pearl essence, and then filled with white wax: the essence is composed of the silver-coloured particles which adhere to the scales of the Bleak (*Cyprinus alburnus*).

The Pearl Oyster is fished in various parts of the world, particularly
of Ceylon; at Tuticorsen,
Tinnevelly, on the coast
at the Bahrein Islands, in
at the Seine Islands; off th
off St. Margarita, or Pear
West Indies, and other pl
of Colombia; and in the
in the South Sea. Pearls
been found on the Scotch
rious other places. The m
fisheries are those on the
far distant from the islan
the west side of the Persian
Oysters are found along
Arabian Coast. The fishing
into two portions—the one
and cold, the other the l
the cooler weather of the
diving is practised along th
water; but it is not until
months of July, August, an
the Bahrein banks are
The water on them is abo
deep, and the divers are mu
when it is cold; indeed,
when it is not as warm
frequently becomes even
hottest months of the sum
dive, they compress the no
a small piece of horn, whic
out, and stuff their ears w
the same purpose. They
their waists, to contain the
their descent by means o
they hold by a rope attache
shake it when they wish
A person usually dives from
times a day in favourabl
when otherwise, three or
They continue under wate
to a minute and a half,
minutes. The exertion is e
and the divers are unhealthy

PECCARY. (*Dicotyles*
chydermatous animal, wh
has very much the appear
Hog, is a native of South A
a short compact form, thick

WHITE-LIPPED PECCARY.—

upper parts of the body with
dark-coloured bristles, each
lowish-white rings; and
generally a whitish band
head is rather large; the
ears short and upright; an
of the body nearly naked.

merely a fleshy protuberance; and at
ower part of the back is a glandular
, from which exudes a strong-scented
and which is surrounded by strong
s. The Peccary is a gregarious animal,
its wild state is fierce and dangerous;
times attacking the hunters with great
, and often killing the dogs. It is
in destroying several reptiles, particu-
the rattle-snake, which it does without
ast dread or inconvenience. It is ca-
of being tamed like the hog, lives on
me kind of food, and has nearly the
habits and natural inclinations. The
f the Peccary is tolerable food, but, to
t an unpleasant flavour, the dorsal
must be cut away as soon as the ani-
killed. Our figure represents what
of the older naturalists regarded as a
y of the Tajacu; but modern writers
roved its distinctness as a species, and
ts white lips have named it *Dicotyles*
s. It is also a native of South Ame-

TEN. A Molluscous animal, whose
ous covering has a hinge like that of
sters; but they are easily distinguished
he *Ostrea* family, by their inequivalve
rcular shell being almost always re-
y marked with ribs, which radiate
he summit of each valve to the cir-
rence, and are furnished with two an-
productions called *ears*, that widen
ies of the hinge. The animal has a
oval foot supported on a cylindrical
cle, in front of an abdomen in form of
hanging between the branchiæ. In
species, known by the strong sinus
their anterior ear, there is a byssus.
thers are not adherent, and can even
with considerable velocity, by flapping
valves together. The mantle is sur-
ded with two rows of filaments, several

GIBBOUS SCALLOP-SHELL.
(PECTEN GIBBOSUS.)

ose of the exterior row being terminated
little shining green globule. The mouth
rnished with many branched tentacula
ad of the four usual labial laminæ. The
-shells are often coloured in a lively
ner, and many species are remarkable
he difference in colouring observable in
two valves. The well-known large spe-
found on our coasts (the *Pecten jacobæus*
thors) is the Scallop or Pilgrim's shell,
in front of the hat by those who had
visited the shrine of St. James, in the Holy Land. There are numerous species, some of which are found in the British seas.

PECTENIBRANCHIATA. The name given by Cuvier to an order of Gasteropods. It includes almost all the spiral univalve shells, as well as several which are merely conical. The animals of this order are so named from the comb-like form of the gills, which are usually situated in a cavity behind the head.

PECTUNCULUS. A genus of Conchiferous Mollusca, found in the Atlantic Ocean, the Mediterranean Sea, and in the West Indies, where it lives on the sandy or muddy coasts, and moves by the aid of its foot, which is large. The shell is orbicular, equivalve, sub-equilateral, thick, striated longitudinally; and many of the species covered with a soft downy epidermis: hinge curved, with a line of teeth diverging on each side, those in the middle being incompletely formed; ligament external. No byssus.

PEDICULUS. [See LOUSE.]

PEDIONOMUS. A genus of Gallinaceous birds, allied to the Partridges and Quails, which contains the PEDIONOMUS TORQUATUS, or COLLARED PLAIN WANDERER. This is a small quail-like bird, with lengthened bustard-like legs, admirably suited for running, and a small hind toe. It is a native of South Australia, on the desert plains of which it is not unfrequently found.

PEDUM. A singular genus of Conchifera, only one species of which is known, and that is found in the Indian seas, at great depths, and is rare. The shell is hatchet-shaped, inequivalve, and slightly eared; attached by a byssus passing through a sinus in the lower valve; hinge toothless, with a triangular area in each valve, separating the umbones; ligament contained in a groove running across the area; bosses unequal and distant, the lower valve rather convex, with the sides reflected over the upper. This rare shell is white, slightly tinged with purple near the bosses; and buries itself partially in madrepores, in crevices of its own boring.

PEEWIT. [See LAPWING.]

PEGASUS. A genus of Lophobranchiate fishes, native of the Indian Seas, and in some degree allied to the genus *Syngnathus*. They have a snout, with the mouth under it, and movable, like that of a sturgeon, only composed of the same bones as in other osseous fishes. The body is armed as in Hippocampus, but their thorax is broad, depressed, and with the gill openings in the sides. They have two distinct ventrals in rear of the pectorals, which are often large, and have procured these fishes the name of Pegasus, or Flying Horses. The dorsal and anal fins are opposite each other; the abdominal cavity is wider and shorter than in Syngnathus, and the intestine has two or three flexures.

The principal species, the DRAGON PEGASUS (*Pegasus draco*) is a small fish, three or four inches in length, and is remarkable for the size of its pectoral fins, which are sup-

posed to enable it, like the Exoceti and some other fishes, to support itself for a few moments in air, while it springs occasionally over the surface of the water. The thorax or superior part of the body is of a broad, slightly flattened, squarish form, and is marked both above and beneath by several radiated shields or bony tubercles of considerable size: from each side the abdomen springs a lengthened cirrus, which supplies the place of a ventral fin: from the thorax the body decreases suddenly in diameter, and is marked into several divisions or transverse segments; the tail is small and slightly rounded; and the pectoral fins are large, of a rounded shape, with an indented outline: the eyes are large and protuberant, and the snout of a sub-conical form, but with a slight dilatation towards the tip. The colour of this fish is whitish, with a cast of pale brown.

The Flying Pegasus (*Pegasus volans*) is somewhat smaller than the preceding: snout much elongated, flattened, rounded, and slightly dilated at the tip; marked by a longitudinal channel, and denticulated on the edges: on the head a rhomboidal depression, and behind it two deep sub-pentagonal cavities: last joints of the body, next the tail, pointed on each side.

The Swimming Pegasus (*Pegasus natans*) is of a much more slender shape than that of the *P. volans*: colour yellowish brown,

SWIMMING PEGASUS.—(P. NATANS.)

whitish beneath; snout slender, slightly dilated and rounded at the tip: pectoral fins rounded, and of moderate size; dorsal situated on the middle of the back; tail small, and slightly rounded: ventral cirri slender and flexible.

PEKAN, or WOOD-SHOCK. The name given to a species of Marten (the *Martes Canadensis*) found in North America.

PELECANIDÆ. The name given to a family of *Natatores* or Swimming Birds. They have the hind toe united with the others by a single membrane; they are excellent swimmers, often perch on trees, and have short legs: their beak is long, the edge of it generally toothed; and the skin of the throat is more or less extensible, forming a bag in which they keep the fish as they catch them, to feed their young. They are a large, voracious, and wandering tribe, living for the most part on the ocean, flying with ease and swiftness, and never visiting the land for any length of time but at the season of incubation.

PELICAN. (*Pelecanus.*) This
containing several large web-foo
of birds, residing on rivers, lakes, o
sea-coast, and preying on fish. T
long, straight, broad, and much dep
upper mandibles flattened, termin
nail, or very strong hook, the low
by two bony branches, which are
flexible, and united at the tip;
these branches is suspended a nak
form of a pouch; face and thro
nostrils basal, in the form of narro
dinal slits; legs short and strong
four toes connected by a web;
moderate dimensions. "The
pouch, whose elasticity is well kn
who have witnessed the shapes in
is stretched and formed by the
showmen, will hold a considerabl
of fish, and thus enables the bird
of the superfluous quantity whi
taken during fishing excursions,
its own consumption or for the n
of its young. In feeding the nostl
the male is said to supply the w
female when sitting in the same
the under mandible is pressed a
neck and breast, to assist the bi
gorging the contents of the capac
and during this action the red
upper mandible would appear t
contact with the breast, thus
foundation, in all probability, fo
that the Pelican nourishes her y
her blood, and for the attitude in
imagination of painters has plac
in books of emblems, &c., with
spirting from the wounds mad
terminating nail of the upper man
the gaping mouths of her offspring
derip. Pelicans are gregarious, a
their favourite food: they store
prey in their gular pouch, from w
gradually transferred to the ma
the process of digestion goes on;
harassed or pursued, they readily
contents of the stomach, like the
Though remarkable for their vora
of the species have been trained
the service of man. The species
spread throughout the world, but
merous. In external appearance
very nearly resemble each other,

The Common Pelican. (*Pelican*
talus.) The colour of the Pelican
faintly tinged with flesh or light
which is brightest in the breedi
gullet with a bright yellow pouch.
quill-feathers and spurious wings
the bag at the throat is flaccid, ses
and capable of great distension; n
round the eyes and at the base
where the frontal feathers form
flesh-colour; the upper mandible b
a crimson line running along the t
at the base, yellowish at the ti
terminal nail red; irides hazel;
tail short. Length between five a
expanse of wings twelve or thi
The young are distinguished by
valence of ash-colour in their
About the middle of September

pair to Egypt, in regular bands, n an obtuse angle. During the ths they take up their abode rs of the Black Sea and the ece. In France they are very t Britain unknown. They ge- their prey in the morning and n the fish are most in motion.

COMMON PELICAN,
[illegible] ONOCROTALUS.)

Pelican retires a little way on est, with its head leaning against nd in this attitude it remains onless, till hunger calls it to repose. It then flies from its , and, raising itself thirty or ve the surface of the sea, turns one eye downwards, and con- g till it sees a fish sufficiently face, when it darts down with wiftness, seizes it with unerring d stores it away in its pouch; it gain, and continues the same ill it has procured a competent female feeds her young with fish en macerated for some time in The Pelican generally breeds in uncultivated places, particularly ls and lakes, making its nest, ot and a half in diameter, and ly deep, of sedges and aquatic ining it with soft grass. It lays white eggs, of equal roundness ds, and which, when persecuted, hides in the water. When it ry and desert places, it brings young in its bag, which is capable g nearly twenty pints. Pelicans seen farther than twenty miles nd. To a certain extent, they gregarious.

nd which Capt. Flinders gives of s which he saw while on his iscovery at '*Terra Australis*' is pathetic as it is descriptive: the old birds were sitting upon of the lagoon, and it appeared ands were their breeding places: , but from the number of bones ns there scattered, it should seem ad for ages been *selected for the* ne of *their existence. Certainly* none more likely to be free from disturbance of every kind could have been chosen, than these islets in a hidden lagoon of an uninhabited island, situate upon an unknown coast near the antipodes of Europe: nor can anything be more consonant to the feelings, if Pelicans have any, than quietly to resign their breath, whilst surrounded by their progeny, and in the same spot where they first drew it." It was on this passage that Mr. James Montgomery founded his beautiful poem, 'The Pelican Island.'

In many places the Pelicans are almost regarded as sacred birds: for instance, a correspondent of the Athenæum, when travelling in Persia, speaks of "an immense flock of Pelicans which got up out of the reeds, and flew across our course, many passing quite close to the peak of our sail; one of our Greek servants, Yanni, a Cypriote, drew his pistol to fire at them: but his arm was caught by an Arnout, who told him the bird was sacred, Pelicans having brought water in their bill-pouches to Ali after a battle, when he lay on the desert faint with extreme thirst and toil."

PELIDNOTA. A genus of Lamellicorn Beetles of an elongated shape, somewhat related to the Cockchafer. It contains many Brazilian species, some of them with brilliant metallic green and copper reflections. In this genus we may specify, from Dr. Harris's work, the common North American species.

The PELIDNOTA PUNCTATA, or SPOTTED PELIDNOTA. A large beetle, arranged among the *Rutelidæ*, which is found on the cultivated and wild grape-vine, sometimes in great abundance, during the months of July and August. It is of an oblong oval shape, and about an inch long. The wing-covers are tile-coloured, or dull brownish yellow, with three distinct black spots on each; the thorax is darker, and slightly bronzed, with a black dot on each side; the body beneath, and the legs, are of a deep bronzed green colour. These beetles fly by day; but may also be seen at the same time on the leaves of the grape, which are their only food. They sometimes prove very injurious to the vine. The only method of destroying them is to pick them off by hand, and crush them under foot. The larvæ live in rotten wood.

PELOPEUS, or DIRT-DAUBER. [See WASP.]

PENELOPE, or GUAN. (*Penelope cristata.*) This bird resembles, both in appearance and manners, the Curassows, and seems, like them, to be capable, with proper care and attention, of being added to our stock of domesticated poultry. In a wild state they inhabit Guiana and Brazil, and are said to furnish an excellent dish for the table. They are about thirty inches in length, the tail being about thirteen. Upper parts dusky black or bronze, glossed with green and olive; fore part of neck and breast spotted with white; belly and legs, lower part of the back, and under tail-coverts, reddish. Cheeks naked, and of a purple violet colour. Bill

dusky. On the head a thick tufted crest, which the bird can raise or depress at pleasure. Naked part of the throat scarlet, with an extensible fold of depending skin. Their food consists principally of seeds and fruits,

GUAN.—(PENELOPE CRISTATA.)

which they search for and eat upon the ground; but they build their nests and perch on trees. The females lay from two to five eggs. From the shortness of their wings their flight is low and heavy. Their note is so extremely loud, that when any number are collected near the same spot, they make the woods resound with their clamorous cries.

PENGUIN, or PINGUIN. (*Sphenicus apterodytes.*) The name of a remarkable group of aquatic birds, exclusively found in the Antarctic seas, and deriving their name from their *pinguidity*, or excessive fatness. Their feet are placed so far back, that the body is quite upright when the bird is standing on the ground, for which purpose the tarsus is enlarged like the sole of the foot of a quadruped. The wings are very small, and lose altogether the power of raising the body in the air, being covered with short, rigid, scale-like feathers, disposed in regular order, instead of having their surface extended by prolonged feathers. While in the water, which is their natural element, they move with great alertness and rapidity; but on the land their motions are slow and awkward, and, from the form of their wings, they cannot fly. The female lays from one to three eggs, forming a rude excavation or burrow in the sand, instead of a nest, and it is only during the period of incubation that they are to be found on shore. The largest species is the GREAT MAGELLANIC PENGUIN (*Sphenicus Magellanicus*), which, although not more than two feet in length, is sometimes so bulky as to weigh from thirty to forty pounds.

The KING PENGUIN (*Aptenodytes Patachonica*), as described by Mr. G. Bennett, who saw a colony of these birds which covered an extent of thirty or forty acres, "are arranged, when on shore, in as compact a manner and in as regular ranks as a regiment of soldiers, and are classed with the greatest order, the young birds being in one situation, the moulting birds in another, the sitting hens in a third, the clean birds in a fourth, &c.; and so strictly do birds in similar condition congregate, that should a bird that is moulting intrude itself among those which are clean, it is immediately ejected from them. The females hatch the eggs by keeping them close between their thighs; and [illegible] during the time of incubation, carrying their eggs with them. the male bird goes to sea and [illegible] the female, which becomes very [illegible] young are hatched, both parents and bring home food for it; it [illegible] so fat as scarcely to be able to [illegible] birds getting very thin. They [illegible] right in their roosting-places, [illegible] the erect position until they [illegible] beach, when they throw themselves [illegible] breasts, in order to encounter the [illegible] sea met with at their landing-[illegible] species have been confounded [illegible] name: the species of Forster is [illegible] Mr. G. R. Gray *Aptenodytes Forsteri*, Pennant's, which would seem [illegible] described by Mr. Bennet, is called Gray *Aptenodytes Pennantii*.

Of the habits of another species [illegible] the JACKASS PENGUIN (*Eudyptes* [illegible] Mr. Darwin gives the following [illegible] "One day, having placed myself [illegible] Penguin and the water, I was much [illegible] by watching its habits. It was a [illegible] and, till reaching the sea, it regarded [illegible] and drove me backwards. Nothing [illegible] heavy blows would have stopped it; [illegible] inch gained he firmly kept, standing [illegible] before me, erect and determined [illegible] thus opposed, he continually rolled [illegible] from side to side, in a very odd [illegible] If the power of vision only lay in the [illegible] and basal part of each. This bird commonly called the Jackass Penguin [illegible] habit, while on shore, of throwing [illegible] backwards, and making a loud noise [illegible] very like the braying of that animal [illegible] while at sea and undisturbed, its [illegible] deep and solemn, and is often heard [illegible] night-time. In diving, the little [illegible] wings are used as fins; but on the [illegible] front legs. When crawling (it moves [illegible] on four legs) through the tussocks [illegible] side of a grassy cliff, it moved so rapidly [illegible] that it might readily have been mistaken [illegible] a quadruped. When at sea, and [illegible] comes to the surface, for the purpose [illegible] breathing, with such a spring, [illegible] again so instantaneously, that [illegible] one at first sight to be sure that it was [illegible] leaping for sport."

We are told by Sir James Clark [illegible] his Voyage of Discovery in the Southern [illegible] Antarctic Regions, that when he [illegible] forming the ceremony of taking [illegible] of the newly-discovered lands, [illegible] Victoria Land, in the name of His [illegible] he was surrounded by Penguins in [illegible] multitudes. These are his words: [illegible] session Island is situated in lat. 71° [illegible] long. 71° 7' E., composed entirely of [illegible] rocks, and only accessible on [illegible] side. We saw not the smallest appearance [illegible] of vegetation, but innumerable [illegible] Penguins completely and densely [illegible] the whole surface of the island, [illegible] ledges of the precipices, and even [illegible] summits of the hills, attracting us [illegible] as we waded through their ranks, [illegible] ing at us with their sharp beaks [illegible] possession; which, together with [illegible]

d the insupportable stench
ed of guano, which had been
s, and which may at some
ble to the agriculturists of
n colonies, made us glad to
, after having loaded our
ogical specimens and pen-
nks, *Razor-bills*, and *Puffins*
birds of the northern hemi-
ng to the genus *Alca*.
er our readers to Mr. G. R.
of the Penguins in the
Voyage of H.M. Ships Erebus
The galleries of the British
in a very fine collection of
irds.

NUS. A genus of *Radiata*,
many curious species; most
nd in a fossil state. As the
he numerous joints of which
osed are five-angled; hence
etimes called "Five-angled
animals." Mr. Thompson
species (*Pentacrinus Euro-*
ve of Cork and elsewhere on

E PENTACRINUS BRIAREUS
(FOSSIL.)

De Blainville has formed
tinct genus, which he calls
This species is said to be fixed
marine bodies only in early
es afterwards detached, form-
omatula, which moves freely

MIS. A genus of Peduncu-
. [See ANATIFA.]

IA. A family of carnivorous
terrestrial, others aquatic.
joints to the tarsi of all the
name.

S, or PURSED BANDI-
us of Marsupial animals, of
pecies are found in Australia.

erca fluviatilis.) This well-
be found in clear rivers and
nd nearly the whole of the
of Europe; and in England
one of either in which it is
not common. Its general size varies from ten to eighteen inches in length, and its weight from one to three pounds. Occasionally it is much larger. The body of the Perch is compressed, and its height is about

COMMON PERCH.—(PERCA FLUVIATILIS.)

one-third of its length; the upper part is a rich olive brown, passing into golden yellowish white below; and the sides have usually five or six dark transverse bands: the first dorsal fin is a pale violet-brown, marked at the back of the spiny part by one large and one small black spot; the second dorsal and pectoral fins pale brown; ventral, anal, and caudal fins, bright vermillion; the irides golden yellow. The Perch usually spawns in the early part of the spring; is of a gregarious disposition, and is fond of frequenting deep holes in rivers which flow with a gentle current: it is extremely voracious; bites eagerly at a bait; and is very tenacious of life. Its flesh is firm and delicate.

PERCHING BIRDS. [See INSESSORES.]

PERCIDÆ. A family of Acanthopterygious fishes; of which the *Perch* furnishes an example.

PERDICIDÆ. The name given to a family of birds which includes the Partridges, Quails, Francolins, &c. [See PARTRIDGE.]

PEREGRINE FALCON. [See FALCON.]

PERISTERA. A genus of the family *Columbidæ*, containing the Partridge Pigeon (*Peristera montana*), and the White-bellied Pigeon (*Peristera Jamaicensis*) and many other species.

PERISTERA HISTRIONICA, or HARLEQUIN BRONZEWING. A fine Pigeon found on the Mokai, a river falling into the Namoi, in Australia. Mr. Gould saw two or three immense flocks, and supposes it must be a bird belonging to the interior of Australia: its wings are long, and it has great power of flight. [See PIGEON.]

PERIWINKLE. (*Turbo littoreus.*) A well-known species of Mollusca, more extensively used as food than any of the other testaceous univalves. This shell is easily gathered, as it is found on all our rocks which are left uncovered by the ebbing of the tide. Children are principally employed in the fishery, and they are sold by measure. They are in general used after being plainly boiled, and are consumed in great quantities by the poor inhabitants on the coast.

PERLIDÆ. A family of Neuropterous insects, comprising a few species of moderate size; distinguished by the large size of the posterior pair of wings; the body oblong,

resting upon stones, pilings, and plants growing close to the water's edge; they are sluggish in their movements, and the larger species are esteemed an excellent bait for trout. In their preparatory states they reside in the water, the larvæ being naked, not enclosed in a case, and in general form resembling the imago, except in wanting wings. These insects have been studied much in this country by Mr. Newman, and abroad by M. Pictet of Geneva; the latter has published their history with much detail.

PERN, or HONEY-BUZZARD. (*Pernis apivorus.*) This is one of the most elegant of the British birds of prey, or rather of such migratory species as become occasional visitants here. It is a trifle longer than the common Buzzard, and rather more slender: the bill is black, the irides yellow, the crown of the head is ash-coloured, and the cheeks are covered with small feathers. The neck, back, scapulars, and covert feathers of the wings, are of a deep brown; the breast and belly are white, marked with dusky spots pointing downwards; the tail is long, of a dull brown colour, and marked with three broad dusky bars, between each of which there are two or three of the same colour, but narrower: the legs are short, strong, and thick; and the claws are large and black. The Honey Buzzard generally lays two eggs, blotched over with a fainter and a deeper red: it builds its nest on small twigs, which it covers with wool. It feeds on bees, wasps, &c.

In an interesting article on the changes which take place in the plumage of this bird, communicated by W. R. Fisher, Esq., of Great Yarmouth, to the "Zoologist," the writer says, "As the Honey Buzzard has, I believe, never, except in the instance recorded by White of Selbourne, in the year 1780, been satisfactorily ascertained to have bred in this country, British ornithologists are deprived of this means of watching the changes by which it ultimately assumes the adult dress. For even if it were possible to

could easily be giv
it being about the l
nests are chiefly
twigs, and made v
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tion chosen for the
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PERNA. A gen
lusca, the shell of
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They are mostly fo
Islands, &c., and ge
rocks deep in the s
being frequently f
each other by the
chiefly distinguish
number, and regula
hinge and the sinu
byssus. Its shape
gammon of bacon:

PETALOCERA.
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of the males are ar
or protuberances, o
conceive the uses.
more or less oval an
and the anterior
outside. In many
those which feed u
edge of the mandibl
horny plate, with v
nels, well formed
insects subsist on ve
while in a state of
fresh leaves and flow
ing the roots of gra
much damage. Th
generally large and
with the top curve
strong, flat on the a
on the posterior; t

one time to have lived in this although now alone known by mains, figured by Mr. Strickland, e name of *Œshna linnæna*. There species known — the *Petalura gi-* New Holland, and the *Petalura* of New Zealand; both of which st once known by the largely de- appendages at the end of the ab- The accompanying figure, copied

CAROVE'S DRAGON-FLY.
(PETALURA CAROVEI.)

e Zoology of H. M. SS. Erebus ror, will give a tolerably accurate the form of this curious genus of a. The name, we may remark, s to it in compliment to the author Story without an End,' in which n-fly is made to act an important

URUS. The Flying Phalanger: ial animal which bears the same hip to the true Phalanger, as the uirrel does to the ordinary squirrel. e of the skin which is extended the fore and hind limbs, the animal ially sustain itself in the air; and evolutions, when favoured by the evening, are considered peculiarly It is destitute of the prehensile e true Phalangers.

EL. (*Thalassidroma.*) A genus of d oceanic birds.

REL, so well known and ded by sailors as the harbingers m,—and to whom the *soubriquet* of Carey's Chicken has been given,— least of all the web-footed birds, by about six inches in length. The f an inch long, hooked at the tip; ils tubular. The upper parts of nage are black, sleek, and glossed ish reflections; the brow, cheeks, er parts, sooty brown; the rump, e feathers on the sides of the tail, ge slender, black, and scarcely an three quarters in length, from the t to the end of the toes. In the f its wings, and the swiftness of its resembles the Chimney Swallow. with on *every part of the ocean*, *r swimming over the surface of the ling waves of the most tempestuous* sea, quite at ease, and in security; and yet it seems to foresee and fear the coming storm before the seaman can discover any appearance of its approach; flocking together, and making a clamorous piercing cry, as if to warn the mariner of his danger. They feed on small marine animals and seeds of seaweeds, and appear very fond of fat or grease, for which, and for the animals put in motion, they will follow in the wake of ships for great distances. They breed in the fissures of rocks, and the female lays two eggs. They fly rapidly, and generally close to the water; and, when in pursuit of food, they suspend themselves by extending their wings, and appear to run on the surface of the water. There are four species, which are so closely allied as to be often confounded. C. Buonaparté, who paid much attention to this genus of oceanic birds, designates them as follows: — *Thalassidroma Wilsonii* (Stormy Petrel); deep sooty black; tail even; wings reaching a little beyond its tip; tube of the nostrils recurved; tarsus one and a half inch long.—*T. Leachii* (Forked-tailed Petrel); brownish black; tail forked; wings

FORK-TAILED PETREL.
(THALASSIDROMA LEACHII.)

not reaching beyond the tip; tube of the nostrils straight; tarsus one inch long. Our figure represents this species: it is copied from the great work of Audubon 'The Birds of America.'—*T. pelagica*: sooty black; tail even; wings reaching a little beyond it; tube of the nostrils almost straight; tarsus seven-eighths of an inch long.—*T. oceanica*: brownish black; tail slightly emarginate; wings reaching more than an inch beyond it; tube of the nostrils recurved; tarsus nearly one and three-fourths of an inch long. —"Whisking with the celerity of an arrow through the deep valleys of the abyss, and darting away over the foaming crest of some mountain wave, they attend the labouring bark in all her perilous course. When the storm subsides they retire to rest, and are no more seen." [For Sooty Petrel, see PUFFINUS.]

PETRICOLA. A genus of Conchifera, found in various parts of the world, in rocks, corals, &c., but most abundant in America. They are delicate, white, and radiated; and

country between the towns of Hang-chow-foo and Shang-hae. I also saw great numbers of them on the river Min, near Foo-chow-foo. I was most anxious to get some living specimens, that I might take them home to England. Having great difficulty in inducing the Chinese to part with them, or, indeed, to speak at all on the subject, when I met them in the country, owing to our place of meeting being generally in those parts of the interior where the English are never seen, I applied to her Majesty's consul at Shang-hae (Captain Balfour), who very kindly sent one of the Chinese connected with the consulate into the country, and procured two pairs for me. The difficulty now was to provide food for them on the voyage from Shang-hae to Hong-Kong. We procured a large quantity of live eels, this being a principal part of their food, and put them into a jar of mud and fresh water. These they eat in a most voracious manner, swallowing them whole, and, in many instances, vomiting them afterwards. If one bird was unlucky enough to vomit his eel, he was fortunate indeed if he caught it again, for another, as voracious as himself, would instantly seize it, and swallow it in a moment. Often they would fight stoutly for the fish, and then it either became the property of one, or, as often happened, their sharp bills divided the prey, and each ran off and devoured the half which fell to his share. During the passage down we encountered a heavy gale at sea; and as the vessel was one of those small clipper schooners, she pitched and rolled very much, shipping seas from bow to stern, which set everything on her decks swimming. I put my head out of the cabin door when the gale was at its height, and the first thing I saw was the cormorants devouring the eels, which were floating all over the decks. I then knew that the jar must have been turned over or smashed to pieces, and that of course all the eels which escaped the bills of the cormorants were now swimming in the ocean. After this I was obliged to feed them upon anything on board which I could find; but when I arrived at Hong-Kong they were not in very good condition: two of them died soon after: and as there was no hope of taking the others home alive, I was obliged to kill them and preserve their skins.

"The Chinaman from whom I bought these birds has a large establishment for fishing and breeding the birds about thirty or forty miles from Shanghae, and between that town and Chapoo. They sell at a high price even amongst the Chinese themselves: I believe from six to eight dollars per pair, that is, from thirty shillings to forty shillings. As I was anxious to learn something of their food and habits, Mr. Medhurst, junior, the interpreter to the British consulate at Shanghae, kindly undertook to put some questions to the man who brought them, and sent me the following notes connected with this subject:—'The fish-catching birds eat small fish, yellow eels, and pulse-jelly. At 5 P. M. every day each bird will eat six taels (eight ounces) of eels or fish, and a catty of pulse-jelly. They lay eggs after three years, and in the fourth or fifth month. Hens are used to incubate the eggs. When about to lay, their faces turn red, and then a good hen must be prepared. The date must be clearly written upon the shells of the eggs laid, and they will hatch in less than twenty-five days. When hatched, take the young and put them upon cotton, spread upon some warm water, and feed them with eel's blood for five days. After five days they can be fed with eel's flesh chopped fine, and great care must be taken in watching them. When fishing, a straw tie must be put upon their necks, to prevent them from swallowing the fish when they catch them. In the eighth or ninth months of the year they will daily descend into the water at ten o'clock in the morning, and catch fish until five in the afternoon, when they will come on shore. They will continue to go on in this way until the third month, after which time they cannot fish until the eighth month comes round again. The male is easily known from the female, it being generally a larger bird, and in having a darker and more glossy feather, but more particularly in the size of the head, the head of the male being large, and that of the female small.' Such are the habits of this extraordinary bird. As the months named in the note just quoted refer to the Chinese calendar, it follows that these birds do not fish in the summer months, but commence in autumn, about October, and end about May — periods agreeing nearly with the eighth and third month of the Chinese year." [See Cormorant.]

The Spotted Cormorant. (*Phalacrocorax punctatus.*) This beautiful species of Cormorant is a native of New Zealand, where it is said to be abundant, although it is extremely rare in ornithological collections. It builds among rocks, and also on trees which grow near the water. It is described in Mr. Gould's splendid "Birds of Australia" as follows:—"Vertical and occipital crest, crown of the head and throat sooty black; back of the neck, lower part of the back, and rump glossy green; a white stripe commencing above the eye passes down each side of the neck to the flanks; lower part of the neck, chest, and abdomen, beautiful leaden gray; under tail-coverts and tail black; mantle, scapularies, and wings brownish ash, all the feathers except the secondaries and primaries having a small spot of black at their tip; from the throat, sides, and back of the neck and thighs, arise numerous plume-like white feathers of a soft loose texture; those on the sides and back of the neck are very numerous, but on the other parts they are few and thinly scattered."

PHALÆNA. [See Moth.]

PHALANGER. (*Phalangista.*) A genus of Marsupial animals, distinguished by having the second and third toes of the hind feet united as far as the last phalanx in a common cutaneous sheath. The *Phalangista Cookii* may be taken as an example.

re several species of Phalangers in a, belonging to the genera *Phalan-* *rosicia*, and *Hepoona*. They are

LOWN-EARED PHALANGER.
(PHALANGISTA CUVIERI.)

ely organized for living in trees. Gould's works on the Quadrupeds of a, descriptions and figures of all the ill be found.

ANGIDÆ. The name of a family *nidæ*, called Harvest-men, or Shep- ders. They have two thread-like minated by a small hook; the legs and slender, the tarsi consisting than fifty joints. The majority of upon the ground, upon plants, or ots of trees, and are very active: ss agile, hide themselves between moss, &c.

ARDPE. (*Phalaropus.*) A genus belonging to the Cuvierian family *tres*. They live in small flocks on oasts, and feed on aquatic and mol- animals. They fly well, and swim ex- sisting the heaviest waves, but never They inhabit far north, migrating tumn and winter to the temperate f both continents. The female builds hore among the grass, laying from ix eggs. Both sexes incubate, and the young, which leave the nest, ut, and swim soon after they are Their flesh is oily and unpa-

COLARCTOS, or KOALA. (*Phas-* *cinereus.*) A Marsupial animal, allied to the Phalangers. It is made, has robust limbs and powerful ut is entirely destitute of tail. It iefly on fruits, and its habits are as it passes along the branches of suspends itself by its claws, after the of a Sloth. It also visits the ground, burrows with facility; and there in a dormant state during the cold The fore feet of this animal have toes, of which *two* are opposed to three; a zoological fact worthy of it is the only instance among Mam- in the hind feet this power does not When the young one leaves the pouch, to the back of the parent for some o New South Wales, where they are , they are often called "Monkeys," etimes "Bears." We extract a short of them which appeared in the Magazine for Dec. 31, 1836, and ten by one who has *shot them, and* them *in a state of confinement* for some time. "They have four hands, having naked palms, which are armed with crooked pointed nails, exceedingly sharp, and rather long. They are covered with fur of a bluish-gay colour, very thick, and extremely soft. It is darker on the back, and paler under the throat and belly, but slightly tinged with a reddish-brown about the rump. The nose is somewhat elongated, and appears as if it was tipped with black leather. The ears are almost concealed in the thickness of the fur, but have inwardly long whitish hairs. The eyes are round and dark, sometimes expressive and interesting. The mouth is small, and they have no tail. Their countenance altogether is by no means disagreeable, but harmless-looking and pitiful. They seemed formed for climbing trees, but they are rather slow in motion, and but moderately active. Like many other animals of the colony, they are drowsy and stupid by day, but become more animated at night, and when disturbed they make a melancholy cry, exciting pity. They feed upon the tops of trees, selecting the blossoms and young shoots; and they are also said to eat some particular kinds of bark. When full-grown, they appear about the size of a small Chinese pig. They are certainly formed differently from every other species of the quadrumana, and it is probable they possess different enjoyments. They are very inoffensive and gentle in manners, if not irritated. The first I ever saw of these animals was caught in a particular manner by a native; and as we witnessed his manœuvres with considerable curiosity, it may afford some interest to relate the anecdote.

"We were ascending very early in the morning Mount Tourang, one of the trigonometrical stations in Argyle, when the native perceived a very large monkey in the act of ascending a tree: he caught it, and being desirous of preserving the animal, we tied it with some silk kerchiefs to the trunk of a small tree, intending to take it to the camp on our return. About sunset we were descending the mountain, and did not forget the prisoner; but, lo! on arriving at the spot, the creature was gone. The native shook his head, whistled, and commenced examining the neighbouring trees, when presently he espied the animal perched upon the top of a high tree, quite at home. "Me catch the rascal directly," said the black, and proceeded first to cut a thin pole about ten feet in length. He next tore a long strip of ropy bark, which he fastened to one end of the pole, in the form of a loop or noose; after which he commenced climbing the tree in good spirits, and confident of success. The animal, on observing the approach of his enemy, ascended higher and higher till he reached the very extremity of the leafy bough on the top of the tree: while the native, mounting as high as he could safely go, could but scarcely reach him with his pole. For a long time he tried to get the noose over the head of the monkey, and several times, when the native imagined he had succeeded, the monkey, at work with his forehand, would repeatedly tear it off and dis-

engage himself. The poor animal, as he looked down upon his perplexing adversary, looked truly piteous and pitiful, and we began to think that the black would fall in his attempt.

"The native, however, growing impatient and angry, ascended a step higher, till the very tree bent with his weight. He tried again, and having succeeded in slipping the noose over the monkey's head, immediately twisted the pole so as to tighten the cord. "Me got him rascal," he exclaimed, as he looked downward to see the best way of descending. "Come along, you rascal, come come, come!" he cried, tugging away at the monkey, who seemed unwilling to quit his post. Down they came by degrees, the black cautiously managing his prisoner, every now and then making faces at him and teasing him, with great apparent delight and satisfaction to himself. We could not but observe the cautious manner in which he appeared at times to treat the monkey, but this caution we soon perceived was very necessary, for when they had descended to where the tree divided into two branches, the black endeavoured to make the animal pass him, so that he might have better command over him. In so doing the monkey made a spiteful catch or spring at the native, but which he cleverly avoided by shifting himself to the other branch with great dexterity. At length, however, both the man and the monkey arrived nearly to the bottom of the tree, when the latter, being lowermost, jumped upon the ground, got loose, and having crawled to the nearest tree, commenced ascending again. We seized him by the rump, thoughtless of danger, but soon thought it advisable to quit our hold, when the native, now enraged, sprung to his tomahawk, and threw it with such force at the unlucky monkey as to knock him clean off the tree. We took the animal to the camp, where it was soon despatched, as we thought, from its pitiful cries, that it was suffering torture from the blow of the tomahawk."

PHASCOLOMYS. [See WOMBAT.]

PHASIANELLA. A genus of Mollusca found in South America, India, New Holland, the Mediterranean, &c. The head of the animal has two long and round tentacula, with eyes on two footstalks; foot oblong. The shell is smooth, oval, variegated; aperture entire, oval; outer lip thin; inner lip thin, spread over a portion of the body

PHASIANELLA BULIMOIDES: WITH ITS OPERCULUM.

whorl; columella smooth, rather thickened towards the base; operculum horny, spiral within. The shells composing this genus are richly marked with lines and waves of various and delicate colours.

PHASIANIDÆ. The name of a family of Gallinaceous birds, of which the genus *Phasianus* is the type. [See PHEASANT.]

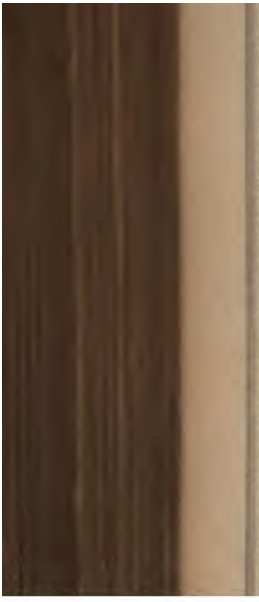
PHASMIDÆ, or SPECTRE INSECTS. A family of Orthopterous insects, allied to the *Mantidæ*, peculiar to warm climates, and remarkable for their very close resemblance to the objects in the midst of which they live. Some of them are destitute of wings, and have the appearance of dead twigs; their legs being extended, and the absence of all motion for a considerable time, favouring the deception: others appear like leaves, &c. Their larvæ differ but little from the perfect insects, except in their colours, and the absence of wings; and there are several species in which these are never developed. It not unfrequently happens that they lose a limb by violence; and this is reproduced, provided the complete growth of the animal has not been attained. A species found in the Navigators' Islands, and described by the late Mr. Williams in his admirable 'Missionary Enterprises'—destroys the top of the Cocoa-nut tree, and has been named *P. cocophages* from this circumstance. We must refer our readers to the works of Mr. G. R. Gray and of M. De Haan on this singular group of insects; we may remark that their eggs are solitary and not enclosed in a case, and that they often resemble small beans or other seeds. [See PHYLLIUM.]

PHEASANT. (*Phasianus colchicus.*) This beautiful Gallinaceous bird derives its origin from Eastern climes, and is said to have been first imported into Europe from the banks of the Phasis, a river of Colchis, in Asia Minor (as its name imports); but it has now become so thoroughly naturalized in this country, and indeed in most others where the temperature is not too low for its constitution, and where ordinary care is taken for its preservation, that both here and in many parts of the south of Europe it is well known and highly appreciated. Of all birds, except, perhaps, the Peacock, the Pheasant has the most beautiful and finely variegated plumage. In size the male may be compared with the domestic Cock. The irides are yellow; round the eyes is a naked skin, of a beautiful scarlet, with small black specks; and under each eye is a small patch of short feathers, of a dark glossy purple colour; the upper parts of the head and neck are of a deep purple, with green and blue reflections; the lower parts of the neck and breast are of reddish chestnut, edged with black, under which appears a transverse golden streak; the whole body, indeed, uniting the finest tints of golden yellow and green with the richest ruby and purple, set off with spots of glossy black. The legs, feet, and toes are horn-coloured. The tail, which is very long and regularly wedge-shaped, partakes of the beautiful colouring above described; and the whole bird has an air of great elegance. This brilliant

her nest, of leaves. In some retired
lays from ten to twenty eggs;
ate of captivity she seldom pro-
ve ten. In the wild state she
r brood with patience, vigilance,
re; but when kept tame, she be-
very remiss in her duty, that a
en is generally made her sub-
he males and females only asso-
ther in the first spring months.
arted, they make a whirring noise,
artridge, and, from being a large
flying slowly, they are readily
en by the sportsman. There are
rieties, produced by climate and
ion, among which are the follow-
: *White Pheasant*, marked with a
black spots on the neck, and rufous
e shoulders; the *Pied Pheasant*,
athers of which are black edged
, and the upper part of the body
own and white; the *Variegated*
which is white and rufous; and
Pheasant, which has a white
axes and Polecats destroy many
; and as these are commonly fe-
aged in incubation, the tendency
ion of the race from this cause is
But the chief loss of the Pheasant-
caused by the mortality of the
s, about the time of changing their
athers, produced by a convulsive
gasp the air, or expel the worms,
r species of Entozoon) that have
a disease known by the name of
s." In their wild state Pheasants
all kinds of grain and herbage,
rest of the gallinaceous tribes.
r size, their beauty, and the de-
their flesh, they are every where
by the sportsman as excellent
d there is, accordingly, no bird
h such pains have been taken in
ation in parks and preserves.
the various pleasing and edifying
es to be found in Mr. Waterton's
there are some on the habits of
ant, and (intimately connected

nothing to recommend it to our notice on the score of brilliancy of plumage, or of fineness of shape. The Pheasant crows at all seasons, on retiring to roost. It repeats the call often during the night, and again at early dawn; and frequently in the day-time, on the appearance of an enemy, or at the report of a gun, or during a thunder-storm. I am of opinion that it does not pair. The female lays from seven to eighteen eggs; but in general the nest contains about twelve.

"Notwithstanding the proximity of the Pheasant to the nature of the barn-door fowl, still it has that within it which baffles every attempt on our part to render its domestication complete. What I allude to is, a most singular innate timidity, which never fails to show itself on the sudden and abrupt appearance of an object. I spent some months in trying to overcome this timorous propensity in the Pheasant, but I failed completely in the attempt. The young birds, which had been hatched under a domestic hen, soon became very tame, and would even receive food from the hand, when it was offered cautiously to them. They would fly up to the window, and would feed in company with the common poultry. But if any body approached them unawares, off they went to the nearest cover with surprising velocity. They remained in it till all was quiet, and then returned with their usual confidence. Two of them lost their lives in the water by the unexpected appearance of a pointer, while the barn-door fowls seemed scarcely to notice the presence of the intruder. The rest took finally to the woods at the commencement of the breeding season. This particular kind of timidity, which does not appear in our domestic fowls, seems to me to oppose the only, though at the same time an insurmountable, bar to our final triumph over the Pheasant. After attentive observation, I can perceive nothing else in the habits of the bird, to serve as a clue by which we may be enabled to trace the cause of failure in the many attempts which have been made to invite it to breed in our yards,



To the illegal possession of the Pheasant alone may be traced the sanguinary nocturnal conflicts between the poachers and those who are appointed to watch for its safety. The poacher is well aware that he cannot procure Pheasants without the aid of a gun; and he knows, at the same time, that the report of that gun will betray him, and bring up the watchers, against whom he would have no chance single-handed. Wherefore, in order that he may come off victorious, he musters an overwhelming force of tinkers, cobblers, masons, smiths, and labourers, armed with bludgeons, and, perhaps, here and there a rusty gun. Taking the precaution to get well primed with beer, off they go, fully bent on having every thing their own way. The Pheasants fall; the watchers come up: oaths and curses are poured out, and a desperate fray commences. Here are furnished, work important for the nearest magistrate, profit to his clerk, expense to the county, and practice for Mr. Ketch.* Let it be also observed, that the unlawful capture of the Hare and the Partridge (which are really *fere* natural) does not produce similar work of mischief. These are taken with nets and snares. The fewer poachers employed, the more certain is their success. A number of men would only do harm, and mar the plan of capture. So sly-crafty is this mode of poaching carried on, that the owner of the soil is not aware of the loss he is about to sustain in the plunder of his game. When his Hares and Partridges are actually on their way to the dealer's shop, he, 'good easy man,' may fancy that they are merely on a visit to his neighbour's manor, or that the Fox and the Polecat may have made free with them. Not so with regard to the capture of the Pheasant. The mansion is sometimes beset; guns are fired close to the windows; females are frightened

it to abandon those pla
turbed. It is fond of a
the berries of the hawt
the wild rose, and the t
salem artichoke. As i
the corn dropped in th
procured, the Pheasant
In the spring it finds a
rishment in the sprouti
clover; but, from the cor
new year till the vernal
food affords a very scant
bird will be exposed to
vagrant sort, unless you co
it at home by an artifici
Boiled potatoes (which th
nuch to those in the ra
are, perhaps, the two mos
that can be offered in th
Beans, in the end, are cl
smaller kinds of grain;
birds, which usually sw
where Pheasants are fe
them; and, if you conce
yew or holly bushes, o
branches of the spruce fi
out of the way of the ro
About two roods of the
cabbage are a most valu
the Pheasant preserve.
ounces of seed in April,
young plants, two feet asu
of June. By the time th
in, these cabbages will af
lent ailment to the Phea
ticularly serviceable wh
deeply covered with sno
that Pheasants are unable
by farmers during the sn
They have a custom of
in arsenic water. This
to birds which pick up t
on the surface of the sn

that the description given by Phœnix is meant for this bird.

ASANT.—[PHASIANUS PICTUS.]

species found in China is the ASANT (*Phasianus nycthemerus*). silvery white colour, with very k lines on each feather and

SILVER PHEASANT.
ANUS NYCTHEMERUS.]

on.—But the most splendid of alled ARGUS PHEASANT (*Argus* This species, which is as large as an inhabitant of the mountains and of some other of the Indian e male has a very long tail; f the wings are large and long; thickly covered with ocellate ARGUS.]

T CUCKOO. (*Centropus.*) A nsorial birds belonging to the y.

ERUS. A genus of Grosbeaks, r building their nests in society. AK.]

A. A sub-genus of Dolphins, by the absence of the beak-like of the jaws. [See PORPOISE.]

E. The name of the family of and amphibious Mammalia, of al (*Phoca*) is the type.

OPTERUS. The generic name ingo (which see). The term is to other birds which have red *Bombycilla phœnicoptera.*

OMYA. A genus of Conchi- sca, one species only of which is known to be in existence at me, and that is from the island where it is frequently found sca; but there are several fossil ing in rocks of the oolitic series. hin, equivalve, ventricose, elon- gaping, transparent, white or yellowish, hinge having a long narrow hollow or pit; ligament external; bosses worn by being placed near each other; muscular impressions two in each valve, rather indistinct. Professor Owen has given a description of the animal of this curious genus.

PHOLAS: PHOLADES. A genus and family of Conchiferous Mollusca, protected by a testaceous bivalve shell; and it is worthy of notice that the Pholas is the only testaceous mollusca which has the property of evolving a phosphorescent light. This quality in the Pholas was first observed by Pliny, and has since been confirmed by Reaumur. Pliny says that the whole substance of the animal is charged with a fluid that has the

PHOLAS STRIATA.

property of emitting a phosphorescent light; and that it will illuminate any substance which it touches. Dr. Priestley says, "This fish illuminates the mouth of the person who eats it: and it is remarkable, that, contrary to the nature of other fish, which give light when they tend to putrescence, this is more luminous the fresher it is: when dried, its light will revive on being moistened either with salt water or fresh; brandy, however, immediately extinguishes it."

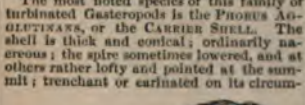
The geographical distribution of the *Pholades* is very wide, and their habit of boring hard substances, such as indurated mud or clay, wood, and stone, renders them, as well as other terebrating testaceans, an object of anxious interest to those who construct submarine works. The species are numerous, and some are very abundant on our own coasts. "Of these," says Mr. G. B. Sowerby, "*Pholas crispata*, *Dactylus*, *candida*, and *parva*, are the most common; several others are described by Turton, in his 'British Bivalves,' of which we are quite convinced the *P. lamellata* is only the young of *P. papyracea*: we are not acquainted with his *P. tuberculata*. Much confusion appears to prevail in regard to several very distinct species." We refer our readers to the newly published work of Messrs. Forbes and Hanley on the British Mollusca and their shells, in which these points and many others are dwelt on and settled.

The *Pholas* has a delicate, milky white, rather transparent shell, covered sometimes with a thin epidermis, oval, elongated, in-

equilateral, gaping posteriorly, and especially at the antero-inferior part; umbones hidden by a callosity; hinge toothless; a flat, recurved, spoon-shaped process enlarged at its extremity, elevating itself within each valve below the umbo; muscular impressions very distant, the posterior one large, oblong, elongated, always very visible, the anterior one small and rounded, both more or less approximated to the edge of the shell, and joined by a pallial impression, which is long, narrow, and deeply excavated backwards. The animal is thick and somewhat elongated: mantle reflected on the dorsal part; anterior aperture rather small; foot short, oblong, and flattened; siphons often elongated and united into a single, very extensible, and dilatable tube; mouth small, with very small labial appendages; branchiæ narrow, unequal, and greatly elongated.—Some interesting specimens of *fossil* Phorides are found in Italy and France, but they are rare.

PHORUS: PHORIDÆ. A genus and family of Molluscous animals which have generally been placed with the *Trochi*; but Mr. Gray, in his systematic arrangement of the genera of Mollusca published in the Synopsis to the British Museum (1840), formed for this genus a peculiar family under the name of *Phoridæ*; having observed that the animal, though a Phytophagous mollusc, had the annular operculum of the *zoophagous* division. These animals are small for the size of the mouth of the shell, and have much the general appearance of the animal of *Strombus*; but their eyes are sessile. The foot is small, and divided into two parts, the front rather expanded, the hind part small and tapering. In colour they are dull opaque white; the proboscis pinkish, and the eyes black. They crawl like a tortoise by lifting and throwing forward the shell with the long tapering tentacles stretched out, the proboscis bent down, and the operculum trailing behind. They are numerous in the Javan and China seas, preferring deep water, and a bottom composed of detritus of dead shells and sand mixed with mud.

The most noted species of this family of turbinated Gasteropods is the PHORUS AGGLUTINANS, or the CARRIER SHELL. The shell is thick and conical; ordinarily nacreous; the spire sometimes lowered, and at others rather lofty and pointed at the summit; trenchant or carinated on its circumference; aperture transversely depressed, angular or sub-angular; edge of the outer lip disunited from the inner at the top; inner lip curved, rather oblique at the base; the columella bent, twisted, and often projecting in front; operculum generally horny, thin, and spiral, with numerous narrow whorls. *Phorus agglutinans*, figured below, is remarkable for the singular habit of accumulating, during its formation, different substances, as stones, corals, small shells, &c., which adhere to its shell. From this circumstance it has received the name of the *Carrier Shell*. Some of the foreign species are peculiarly distinguished by their bright colouring, but those which are common on our own coasts are not. The animal has a distinct head, with two tentacula, and eyes at the base; foot short and round.



CARRIER SHELL.
(PHORUS AGGLUTINANS.)

PHOSPHODES. A genus of birds allied to the Honey-eaters, of which one species is recorded by Mr. Gould: it is

The PHOSPHODES CREPITANS, or CRACK-WHIP BIRD. Like the *Menura* and Wattled *Talegalla*, this bird, which is abundant in many parts of New South Wales, frequents the dense brushes so common on the Australian continent, threading its way with the utmost ease through the matted foliage and thick climbing plants which it meets with in its arboreal retreats. It is a shy and reclusive bird; but its loud full note, ending sharply like the *cracking of a whip*, reverberating through the woods, indicates the locality where it is to be found. It is extremely animated and sprightly in all its actions, raising its crest and spreading its tail in the most elegant manner. This is most observable in the spring, when the males may be often seen chasing each other, while they occasionally stop to pour out their full tide of song; but independently of the Coach-whip Bird's shrill whistle, it possesses a low inward song of considerable melody. The male has the head, ear-covers, chin, and breast, black; a large patch of white on each side of the neck, all the upper surface, wings, flanks, and base of the tail-feathers olive-green; the remaining portion of the tail-feathers black, the three lateral feathers on each side tipped with white; under surface olive-brown, some of the feathers on the centre of the abdomen tipped with white, and forming a conspicuous irregular patch; bill, inside and out, base of the tongue, black; feet reddish-brown. The sexes are much alike in colour, the plumage of the female being more obscure, and her size rather less than that of the male. The food consists of various kinds of coleopterous and other insects.

PHRYGANEA: PHRYGANEIDÆ. A genus and family of Trichopterous insects, comprising the well-known Caddice-flies, or Water Moths of the angler; their larvæ being called *cad-bait*, and residing in portable tubes, composed of various extraneous materials. The type of the family (*Phryganea grandis*), in its perfect state, has a body of a leathery consistence, and thickly clothed with hair; the head small, with prominent semiglobular eyes, and three ocelli. The antennæ are often much longer than the

der, setaceous, and multi-articu- mouth consists of an elongated the prothorax forms a very short d the mesa- and meta-thorax are o an oval or orbicular mass. The ings are elongated and lanceolate ales, but rather more obtuse in the flexed at the sides of the body ose, and are furnished with nu- anching veins; the posterior pair r, but considerably broader, than or, and are folded when at rest. e ordinarily live in cylindrical n at each end, some composed of and others formed of bits of stick us other light materials, which h to it by the assistance of silken pun from the mouth in the same

DDIS-FLY.—(PHRYGANEA GRANDIS.)

e caterpillars. Here the larva re- xposing only its head and three segments of the body, and which ghtest alarm it suddenly withdraws. of the larva in some species con- inute aquatic larvæ, but the greater re purely herbivorous.

the period for assuming the pupa rrived, the larvæ, which reside in cases, fasten them to some fixed beneath the water, and close the mities with an open-work fence, ies in form in the different species, ch, by admitting a current of rmits the respiration of the pupa; Reaumur states, that he actually rate-work in alternate motion from concave, as the water passed out Within this retreat they then be- ctive pupæ, in which they bear a ble resemblance to the imago, ex- the antennæ, palpi, wings, and horter, enclosed in separate sheaths, ged upon the breast; the antennæ, pecies which have those organs, xceeding the length of the body; ended beyond the abdomen, with mities curled up." * * * * "The sects are of small or moderate size, aching a couple of inches in the f the wings. They are very active, with agility, with a kind of gliding ot unlike that of certain Tipulidæ, insects with long tibial spurs; but it is awkward, except *in some of r species, which assemble in troops, er the surface of the water towards ey frequent damp, marshy situ-* ations. From the weak structure of the mouth, it is evident they can live but a very short time in the perfect state, taking no nourishment, and only anxious to continue their species. Their colours are obscure, being ordinarily brown or gray; when handled, they emit a very disagreeable odour. A very few exotic species are ornamented with spots and markings. Few only have been brought from extra-European countries."—*Westwood.*

PHRYNISCUS. A genus of Batrachian Reptiles, containing the *Phryniscus nigricans*, which is the toad so graphically described by Mr. Darwin, who noticed it at Bahia Blanca. "Amongst the Batrachian reptiles," he remarks, "I found only one little Toad, which was most singular from its colour. If we imagine, first, that it had been steeped in the blackest ink, and then when dry, allowed to crawl over a board freshly painted with the brightest vermillion, so as to colour the soles of its feet and parts of its stomach, a good idea of its appearance will be gained. If it is an unnamed species, surely it ought to be called *diabolicus*, for it is a fit Toad to preach in the

BAHIA TOAD.
(PHRYNISCUS NIGRICANS.)

ear of Eve. Instead of being nocturnal in its habits, as other Toads are, and living in damp and obscure recesses, it crawls during the heat of the day about the dry sand-hillocks and arid plains, where not a single drop of water can be found. It must neces-

UNDER SIDE OF BAHIA TOAD.

sarily depend on the dew for its moisture; and this probably is absorbed by the skin, for it is known that these reptiles possess great powers of cutaneous absorption. At Maldonado I found one in a situation nearly as dry as at Bahia Blanca, and thinking to give it a great treat, carried it to a pool of water; not only was the little animal unable

to swim, but, I think, without help would soon have been drowned."

PHYLLIDEA; PHYLLIDIDÆ. A genus and family of Molluscs, generally found adhering to rocks, buildings washed by the sea, or other marine objects; and which, though of a dull colour outside, are often very beautiful in the interior. Some of the species differ from all other univalves, in being composed of movable pieces at the back, formed to facilitate the motion of the animal. Some are particularly simple in form, the shape being no more than that of a conical cup or deep dish; others are boat-shaped; and, when fixed, so fast do they retain their situation, by exhausting the air beneath their bodies, that it is very difficult to force the animal from its position without breaking the shell.

PHYLLIUM. A genus of insects belonging to the family *Phasmidæ*, and popularly known as *Walking-leaves*; some of which have wing-covers so closely resembling the leaves of plants, that the insects are easily mistaken for the vegetable productions around them. They are for the most part natives of the East Indies, Australia, and South America. G. R. Gray Esq., of the British Museum, in a communication to 'The Zoologist,' observes that "in the time of Linnæus only one species was known as the *Mantis siccifolium*, which is figured by Rösel. And it was the general opinion of authors long after that great man's time, that there existed but one species of these remarkable insects, until Stoll gave many figures of them, one of which he considered to differ in some points, and gave to it the name of *Phasma chlorophyllium*. The general opinion having been thus broken in

WALKING LEAF-INSECT, AND EGG. (PHYLLIUM SICCIFOLIUM.)

upon, other species have since been added (five of them are described in the notice to which we refer). * * * These extraordinarily formed insects were, at one time, supposed to partake both of insect and vegetable life; and not only has the perfect insect such similarity to portions of vegetables, but even their eggs might at first sight be taken for the deeply ribbed fruits of umbelliferous plants." The species *bilobatum* is thus described by Mr. Abdomen narrow at the base, enl each side to the middle of the third and then gradually decreasing to the fifth; the outer margins of the seventh are lobed, with the remaining ments suddenly lessened to the tip of the fore legs dilated; the inner has the margin inwardly excised wardly much dentated, the outer oval and entire. Length of body nine lines. Inhabits the Philippine lands.

PHYLLOSOMA, or GLASS CRAB striking genus of Crustacea, belonging the order *Stomapoda*. Our figure will trate, better than any description, give, the form and general character genus. There are many species,

GLASS-CRAB. — [PHYLLOSOMA SPIN

the most part in the tropical parts Atlantic and Indian oceans; they are transparent. Captain Grey, who had opportunities of observing them, during of one, says, "When it was taken the water, it stood upright on its crawled a little like a large beetle, died. In the water it swam with the large joint of which appears feathered. It was not thicker than nest wafer; the back was marked curved lines; and it shrank instantly touched. The species have a horny the touch, are destitute of small, like a transparent scale when the your hand."

PHYSA. A genus of fresh-water occupying a small oval or oblong, thin shell, generally sinistral or and no operculum. The animal long tentacula, with eyes at the long; mantle large, so as to cover shell, and very transparent. The mals are most frequently found on side of the leaves of aquatic plants have a very singular way of adhering surface of the water with the shell wards, and crawl in that direction much apparent ease as on a solid and they will occasionally let themselves down gradually by a thread.

PHYSALIA. A genus of Acalephæ remarkable for its size, the brilliancy hues, and the acute burning pain

ct. [See Portuguese Man-of-

. The name given to a family
l birds. [See Woodpecker.]

GO. The *Chlamyphorus trun-*
h see].

A genus of diurnal Lepidoptera
ongst numerous exotic species,
r native Pieris Crataegi, the
ED White or Hawthorn But-
This is an elegant insect: both
the wings are white, with black
above, the anterior wings are
a their outer edge with irregular
s, transparent and triangular;
r ones are similarly bordered on
edges, but the nervures are less
n the disc; beneath, the anterior
nble the upper surfaces, but the

PIERIS WHITE BUTTERFLY.
(PIERIS CRATAEGI.)

re more dilated; the posterior
he contrary, have the nervures
nger on the upper surface, and
y irrorated with dusky: in both
wings are very transparent, the
e especially. During the earlier
its existence the caterpillar lives
silken web: it is at first black,

IS CRATAEGI—UNDER SIDE.

rwards furnished with short yellow
hairs, and is marked with three
gitudinal lines: it feeds on the
s. The chrysalis is either yellow
with small black stripes and spots.
three weeks the perfect insect
appearance. It is by no means
periodical in its visits rather than
abounding.

F. As the Ring-Dove, Stock-Dove,
e-Dove will be found described
e words *respectively, we shall de-*
scribe almost exclusively to the
omesticated Pigeons, the tenants of the dove-cot. These are the willing attendants on man, and depend on his bounty, seldom leaving the dwellings provided for them, and only roaming abroad to seek amusement, or to procure subsistence; but when, as Bewick observes, we consider the lightness of their bodies, the great strength of their wing, and the amazing rapidity of their flight, it is a matter of wonder that they should submit even to a partial domestication, or occupy those tenements fitted up for the purpose of breeding and rearing their young. Pigeons occur in every climate, and although they thrive best in warm countries, yet with care they succeed also in very northern latitudes. Their manners are gentle and lively; they are fond of society, and have always been held emblematic of peace and innocence; they are faithful to their mates, whom they solicit with the softest coolings, the tenderest caresses, and the most graceful movements. The exterior form of the Pigeon is elegant: the bill is weak, straight, slender, somewhat curved at the point, and has a soft protuberance at the base, in which the nostrils are placed: the legs are short and red, and the toes divided to the origin. They moult once, and the sexes do not differ in plumage.

It would be as fruitless as unnecessary to attempt to describe *all* the varieties of the tame Pigeon; for human art has so much altered the colour and figure of this bird, that pigeon-fanciers, by pairing a male and female of different sorts, can, as they express it, "breed them to a feather." Hence we have the various names of Carriers, Tumblers, Jacobins, Croppers, Pouters, Runts, Turbits, Shakers, Fantails, Owls, Nuns, &c., all birds that at first may have accidentally varied from the Stock-dove, and, by having these varieties still improved by pairing, food, and climate, the different kinds have been propagated. The Dove-house Pigeon breeds every month; but when the weather is severe, and the fields are covered with snow, it must be supplied with food: at other times it may be left to itself, and generally repays the owner for his protection. The Pigeon lays two white eggs, which produce young ones of different sexes. When the eggs are laid, the female sits fifteen days, exclusive of the three days she is employed in laying, and is relieved at intervals by the male; the female performing her share of the duty by night, and the male during the day. When hatched, the young only require warmth for the first three days; a task which the female takes entirely upon herself, and never leaves them except for a few minutes to take a little food. After this they are fed for about ten days, at first with a milky secretion prepared from the glandular coat of the crop, and regurgitated; and afterwards with what the old ones have picked up in the fields, and kept treasured in their crops. This way of supplying the young with food from the crop, in birds of the Pigeon kind, differs from all others. They have the largest crops, for their size, of any birds; and they have the power of distending the crop with air in such a manner, that, in one species in particular, (the

is proverbial, the Pigeon of the dove-house is not so faithful, and having become subject to man, puts on incontinence among its other domestic qualities. Two males are often seen quarrelling for the same mistress; and when the female encourages the freedoms of a new gallant, her old companion shows visible marks of his displeasure, quits her company, or if he approach, it is only to chastise her. Many instances have been known where two males, being dissatisfied with their respective mates, have thought fit to make an exchange, and have lived in peace and friendship with the new objects of their choice. The dove-cot Pigeons, like the rest of the genus, retire to their roost at a very early hour; but they leave it unusually late in the morning; and though they will perch on trees in the day-time, nothing will induce them to roost there at night. They are greatly attached to the cot of their choice; so much so, that they are scarcely to be driven from it but by fire-arms. Pigeons have sharp sight, and are quick of hearing; and when pursued by a hawk they show that they can fly with great velocity. It is their nature to congregate together, to bill in courtship, and to utter a plaintive note.

The CARRIER PIGEON. Of all the varieties, the most remarkable for its attachment to its native place is the CARRIER PIGEON, or MESSENGER; so called from its being used to convey letters from one place to another. These birds are rather larger than most of the common-sized Pigeons; their feathers lie very close and even, and their necks are long and straight; so that when they stand upright on their legs, they show more gentility of shape than most other Pigeons. From the lower part of the head to the middle of the lower chap there grows out a white, naked, fungous flesh, which is called the wattle, and is generally met by two small protuberances of the same luxuriant flesh, rising on each side of the under chap. The eyes are surrounded with the same sort of corrugated flesh; and the circle round the

mate. A small letti
kind of thin paper
under one wing, an
pin (the point being
to a feather. The
altogether confined
obsolete; for altho
Pigeons conveying
besieged town, or
from an army adv
know that they
with effect in "stoc
or in enabling an a
betting to pocket
whether it be from h
fellow-patron of th
Nay, we imagine
likely to be wholly
as are the powers of
if it be true, as state
will perform the di
half an hour!

Having dwelt so
this *serviceable* Pige
give some instructio
order to train a P
says our authority,
fledged young Carr
basket or bag about
and there turn it lo
two or three times,
eight, ten, or twenty
will return from t
kingdom. For if th
young, the best of the
and stand a chance
that the Pigeon int
letter is kept in the
for about eight hou
(rather a long abstin
" use is second natur
diately rise to a gr
round, as is their c
the wing till it has r
what chart it is guid
is among the wonde
ing.

thighed.

. The head of this bird is almost
th a veil of feathers, whence its
body is chiefly white; its head,
e six flight-feathers of its wings
entirely red, yellow, or black;
en its head is red, the tail and
ers should be red; and when its
llow or black, the tail and flight-
ould invariably correspond with

LD-PATE, or WHITE-CROWNED
(*Columba leucocephala.*) We de-
formation respecting this and the
species from Mr. Gosse's 'Birds
.' The author tells us that "this
common in almost all situations,
affects the groves of pimento,
erally adorn the mountain pens.
aromatic berries afford him abun-
delicious food during the pimento
e umbrageous trees afford him a
ut suited to his shy and suspicious
and on them his mate prefers to
rude platform-nest, and rear her
ospring. Wary exceedingly, the
from his seat among the topmost
erns the gunner, himself unseen,
ates his vicinity only by the rush-
strong wings, as he shoots off to
ost part of the grove. In the
eason, however, when alarmed
nesting tree, he does not fly far,
returns; so that the sportsman, by
himself, and watching the bird's
ay bring him down. When the
out of season, he seeks other
berries of the sweet-wood, the
of the bread-nut, and burn-wood,
tard cedar, and the fig, and the
y clusters of the fiddle-wood, at-

He feeds early in the morning,
the afternoon; large numbers

countenance, which, combined with his snow-white head, always reminds me, strange as the comparison may appear, of the grand Bald Eagle. His coo is *Sary-coat-blue*, uttered with much energy, the second syllable short and suddenly elevated, the last a little protracted and descending. Incubation takes place chiefly in the months of June and July. The nest is merely a very slight platform of dry twigs, rudely attached, on which two eggs are laid. They are of delicate whiteness, in form very regularly oval, and in dimensions an inch and a half by one-tenth. The length of the Bald-pate is sixteen inches, expanse twenty-three inches and a half. Irides cream-white; eyelids purplish flesh-colour.

The WHITE-BELLIED PIGEON (*Peristera Jamaicensis*) is chiefly confined to the upland districts; where its loud and plaintive cooing makes the woods resound. It is one of those species which habitually live on the ground: in unfrequented woods, as well those which are open as those which are choked with underwood, the White-belly walks about singly or in pairs, picking up various seeds. Its flesh is generally esteemed; it is white, juicy, and well-flavoured, without being liable to bitterness. "If flushed, it betakes itself to a low tree not far off, whence, if unmolested, it is soon down again. Often, when seen in the woods, it runs a few yards, and then rises to fly, but as if trusting less to its powers of flight than to those of running, alights again immediately, and runs swiftly off among the bushes. It has no regular roosting-place, often spending the night on a stone, or a log, or a low bush that happens to be near the spot where it was feeding at nightfall. This is not the case with the other Doves. The aspect and air of the White-belly are unlike those of its kindred. Its round head, the

rather a low situation; the nest consisting of a few loose sticks, with some leaves in the centre: the eggs are white.

PIKE. (*Esox.*) A genus of Malacopterygious fishes, of the family *Esocidæ*. These fish are distinguished by having only one dorsal fin near the tail; a long slender body, compressed laterally; and the lower jaw projecting beyond the upper. They are extremely voracious and destructive, and their digestive powers are as remarkable as their voracity.

The COMMON PIKE (*Esox lucius*) is found in the fresh waters of most parts of Europe. The body is elongated, and the surface covered with small scales. When in season, it is beautifully marked with a mixture of green and bright yellow spots, passing into white on the abdomen; when out of season, however, these colours become dull. Pikes grow to a large size, occasionally attaining a weight of thirty or forty pounds; and are taken in great numbers as an article of food; their flesh being white, firm, and well tasted. They are strong, fierce, active, and particularly bold; swim rapidly, and occasionally dart along with inconceivable velocity.

PIKE.—(ESOX LUCIUS.)

They are caught either in what are called crown nets, or by the hook; when the latter mode is used, the line must be very strong, and the hook fastened with wire. The bait generally used is a small fish. They attain a great longevity: Pennant speaks of one that was ninety years old; but Gesner relates that, in the year 1497, a Pike was taken at Halibrun in Suabia, with a brazen ring attached to it, on which were these words in Greek characters: "I am the fish which was first of all put into this lake by the hands of the Governor of the Universe, Frederick the Second, the 5th of October, 1230." This fish was therefore two hundred and sixty-seven years old, and was said to have weighed three hundred and fifty pounds! The skeleton, nineteen feet in length, was long preserved at Manheim as a great curiosity in Natural History. Several instances have, indeed, occurred in the lakes of Scotland where Pike of seventy or eighty pounds each have been caught; but nothing like the patriarchal age of the Halibrun Pike was ever heard of elsewhere. Rapid growth requires to be sustained by a corresponding proportion of food; and there can be no fear of a Pike starving while any thing eatable is in the way. Mr. Jesse mentions, that eight Pike, of about five pounds weight each, consumed nearly 800 gudgeons in three weeks; and that one of these devoured five roach, each about four inches long, within a quarter of an hour. The Pike not only makes sad havoc among other fish, but, in default of a sufficient quantity, it will devour frogs, water rats, field mice, small aquatic birds, and other animals, whether alive or dead. In short, so great is its rapacity, that it has been known to contend with the Otter for his prey.

The SEA PIKE. [See GARFISH.]

PILCHARD. (*Clupea pilchardus.*) This fish, which resembles the Herring, not only in general appearance but in its habits, is about nine inches in length, and of a somewhat less compressed and rounder form than the Herring; the scales considerably larger. The head is rather flat, and the mouth is destitute of teeth; the back is of a bluish cast, the belly and sides are silvery, and the upper angle of each of the gills is marked with a large black spot. They feed on minute Crustacea and other marine insects found at the bottom of the water. These fish annually appear on the English coast, and are taken in immense quantities; the same reason having until late years been

PILCHARD.—(CLUPEA PILCHARDUS.)

universally assigned for such vast shoals of Pilchards appearing periodically, as for the Herrings, namely, their presumed migration from the Arctic regions to warmer latitudes for the purpose of spawning. This theory, however, is now, with sufficient reason, abandoned; and it is established, almost beyond a doubt, that they inhabit our own seas, merely forsaking the deep waters and coming towards the shore to deposit their spawn; thus fulfilling a great law of nature in the propagation of their species, and at the same time providing multitudes of human beings with food. On this head we have already spoken in the articles HERRING and MACKEREL, to which we beg to refer. And we shall now avail ourselves of Mr. M'Culloch's account of the Pilchard fishery, which has evidently been obtained from the most authentic sources.

"It is carried on along the coasts of Cornwall and Devon, from the Bolt Head in the latter, round by the Land's End to Padstow and Bossiney in the former. The principal seats are St. Ives, Mount's Bay, and Mevagissey. The fish usually make their appearance in vast shoals in the early part of July, and disappear about the middle of October; but they sometimes reappear in large numbers in November and December. They are taken either by seines or by drift-nets, but principally, perhaps, by the former. A sean is a net, varying from 200 to 300 fathoms in length, and from 10 to 14½ fathoms in depth, having cork buoys on one edge and lead weights on the other. Three boats are attached to each seine, viz., a boat named [illegible] of about 15 tons burden, for carrying the seine; another [illegible], of about the same size, to assist in [illegible]; and a smaller boat [illegible]."

hands employed in these three from 13 to 18, but may be taken, e, at about 16. When the shoals so near the shore that the water depth of the seas, it is employed them; the fishermen being di- per places for casting or shooting persons (*lookers*) stationed for that the cliffs and in the boats. The o row the boat with the sean on round the shoal; and the sean same time, thrown gradually er, assumes, by means of its buoys a vertical position, its loaded at the bottom, and the other the surface. Its two ends are d together; and, being brought ellent situation, it is moored by rs or grapnels; sometimes, how- two smaller seans are employed ecuring the fish. At low water, fish are taken out by a *tuck net*, to the shore. A single sean has to enclose at once as many as nds (1,200 tons) of fish! But greatest quantity ever taken, seldom that as many as 1,200 re caught at a time. The "take," ends upon so many accidental es, that while one sean may ure in a season from 1,000 to nds, others in the neighbourhood a single fish. In some places so strong as to break the seans, ish at liberty. When the quan- is large, it requires several days out, as they must not be re- water numbers than those who conveniently manage.

as the fish are brought on shore, ried to cellars or warehouses, re piled in large heaps, having uantity of salt interspersed be- yers. Having remained in this at 35 days, they are, after being ashed and cleaned, packed in ach containing, at an average, fish: they are then subject to a ient to extract the oil, of which ad yields, provided the fish be nmer, about three gallons; but re taken late in the season do ve half this quantity. This oil for from 12 to 15 per cent. under rown seal oil. The broken and ed salt are sold to the farmers, as manure with excellent effect. ags which float on the water in Pilchards are washed are called e chiefly sold as grease for ma- he sean fishery employs about egularly throughout the season, number more when any consi- ble are inclosed. Four fifths of mployed on shore in the salting, ing, &c. of the fish, are women." *Dictionary* (where further sta- e seen).

egoing account we may add, that Pilchard Fisheries produce, upon 0,000,000 per annum, *or 21,000 Pilchards; and that the season ould 100,000,000.*

Pilchards frequent both the French and Spanish coasts, but not in very considerable numbers, or with much regularity: the coast of Cornwall seems to be their native home; for there they are found through all the seasons of the year.

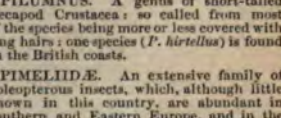
PILOT-FISH. (*Naucrates ductor.*) This fish is in size and shape like the mackerel, and may be immediately recognized by certain conspicuous bands which surround its body. Its general colour is a silvery grayish blue, darkest on the back; five dark blue transverse bands pass round the body, and both on the head and tail are slight indications of another band. The head is small, the under jaw rather the longer, and the nose rounded; the scales are small and oval; the ventral fins are attached to the abdomen

PILOT FISH.—(NAUCRATES DUCTOR.)

by a membrane through one-third of their length; the pectoral fins are clouded with white and blue, the ventrals nearly black. The Pilot-fish will frequently attend a ship during its course at sea for weeks or even months together; and there are many curious stories told respecting its habits, in occasionally directing a Shark where to find a good meal, and also in warning him when to avoid a dangerous bait. We shall, however, leave the relation of such wonders to others; and be content with observing that the Pilot-fish is frequently found in company with the Shark, and is well rewarded for his attendance in being able to snatch up the morsels which are overlooked by his companion.

PILUMNUS. A genus of short-tailed Decapod Crustacea: so called from most of the species being more or less covered with long hairs: one species (*P. hirtellus*) is found on the British coasts.

PIMELIIDÆ. An extensive family of Coleopterous insects, which, although little known in this country, are abundant in Southern and Eastern Europe, and in the



PIMELIA SUBQUADRATA.

deserts of Africa: they are fond of salt and sandy situations, and consequently frequent the shores of the sea, particularly the Me-

diterranean. They are distinguished by having the elytra soldered together; the wings rudimental or obsolete; the palpi filiform; the mandibles bifid at the tips; and the maxillæ concealed by the mentum, which is very large, and not narrowed at the base. Their colours are black or obscure; they are exceedingly sluggish, and on being alarmed they emit a disagreeably fetid fluid.

PIMELODUS. A genus of malacopterygious abdominal fishes, separated by Lacepede from the genus *Silurus* of Linnæus: by modern Ichthyologists again this genus is subdivided. The head is depressed; there are two dorsal fins, the second adipose. There are very many species of this group, found chiefly in South America, the Nile, and some of the Eastern rivers. We figure a small species discovered by M. Humboldt in the kingdom of Quito, where it lives in streams, and is only occasionally eaten by the very poorest of the Indians. This species has two cirri on the head; it is of an olive colour, sprinkled with small black spots, and is about four inches long; but the striking fact whence it derives its specific name, (*P. Cyclopum*) is its being found sometimes in thousands, ejected from the crater or the apertures on the sides of volcanoes. The inhabitants know them well, and call them *prenadillas*. They are believed to abound in subterraneous lakes, and only to be found by accident in the streams. On emerging from the crater they are found so little changed, that they can always be recognized: a proof that the heat of the water thrown up from the volcano can have little effect on them: this may in part be owing to the mucilage with which they are covered.

PIMELODUS CYCLOPUM

PINE MARTEN. [See MARTEN.]

PINION [MOTHS]. A name applied by collectors to different species of Moths, of the genus *Cosmia*.

PINNA. A genus of Mollusca, called also the *Wing-shell*, which in many respects approaches the Mussels. It has two equal wedge-shaped valves, united by a ligament along one of their sides; and attains a very considerable size, sometimes being nearly three feet long. The animal fixes itself, by its *byssus*, which is remarkably long and silky, to submarine rocks and other bodies; where it lives in a vertical position, the point of the shell being undermost, and the base or edge above. Sometimes large quantities of them are even found attached to a sandy bottom at the depth of a few fathoms. They are common in some parts of the Mediterranean; and are not merely sought as food by the inhabitants on the coasts, bu gather the byssus, of which a stuff formed that is remarkable for its warm suppleness. The filaments are exte

PINNA ANGUSTANA.

fine and strong, and the colour, whic reddish-brown, never fades. The fine sus of the ancients was fabricated from filaments; and in Sicily they are still times manufactured into gloves and articles of dress, though, it must be cont more as an object of curiosity than for

PINNIPEDES. A group of Decap Crustacea, met with at a distance fro coasts. They are characterized by h the hind pair of legs terminated by tened plate for swimming. The most able of these swimming or shuttle-cr they are termed, are the exotic species posing the genus *Matuta*, which hav carapax nearly circular, and armed on side with a strong spine, and with the posterior pairs of legs terminated by lated plate for swimming. Some smaller species, found on our own are exceedingly abundant, and furni lower orders in London and elsewhere an article of food.

PINNOTHERES, or OYSTER C A genus of Decapod Crustaceans, of small size (some of them called Pea-c which reside, during a portion of the y least, inside various bivalve shells, sa

PEA-CRAB.—[PINNOTHERES VETERU

mussels, &c. The carapace of the f is suborbicular, very thin and soft; that of the males is firmer and near bular, and rather pointed in front; t are of moderate length, and the claws ordinary form; the tail of the female ample, and covers the whole of the side of the body. The ancients believe the Pea-crab lived upon the best term the inhabitant of the shell in which found; and that they not only warne of danger, but went abroad to cater fo

PINTAIL DUCK. (*Dafila acuta.*) is an elegantly formed, long-bodied the neck longer and more slender than others. It is a shy and cautious bird, in the mud flats and shallow fresh marshes, but rarely resides on the sea

the whole northern parts of
, and America. Great flocks
metimes spread along the lakes
Scotland and Ireland, as well
rior lakes of both those coun-
ale Pintail Duck is twenty-six
th, and two feet ten inches in
ill is a dusky lead colour; head
he neck pale brown, each side
marked with a band of purple
ing the white; hind part of
f of the neck black, bordered
by a stripe of white, which
the lower part of the neck be-
f the breast and upper part
white, thickly and elegantly
transverse undulating lines of
ed there tinged with pale buff;
middle of the belly whitish;
pencilled with waving lines;
under tail-coverts black; lesser
brown ash; greater wing-co-
pped with orange; below which

L DUCK.—(DAFILA ACUTA.)

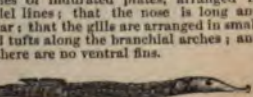
om of rich golden green, bor-
ith a band of black, and another
margins dusky brown; tertials
edged with white, and tinged
mp and tail-coverts pale ash,
dark brown; tail greatly
two middle tapering feathers
inches longer than the others,
he rest brown ash, edged with
a pale lead colour. The female
of a dark brown colour; back,
he neck above, black, each fea-
y warred with broad lines of
ite, these wavings becoming
e scapulars; but the general
dull brownish white, speckled
own.

genus of Batrachian reptiles,
to the common Toad, but dis-
the body being horizontally
head large and triangular,
ing, tympanum concealed be-
, the eyes small, placed near
of the upper jaw. The best
n is the SURINAM TOAD, PIPA
a (the *Rana pipa* of Linnæus).
considerably exceeds in size
the Common Toad. It is one of those animals which, at first view, every one pronounces deformed and hideous; the general uncouthness of its shape being often aggravated by a phenomenon unexampled in the rest of the animal world, namely, the young in various stages of exclusion, proceeding from cells dispersed over the back of the parent. It was for a long time supposed that the ova of this extraordinary reptile were produced in the dorsal cells, without having been first excluded in the form of spawn; but it is

SURINAM TOAD.—(PIPA SURINAMENSIS.)

now thoroughly ascertained that the female Pipa deposits her eggs or spawn at the brink of some stagnant water; and that the male collects or amasses the heap of ova, and deposits them with great care on the back of the female, where, after impregnation, they are pressed into the cellules, which are at that period open for their reception, and afterwards close over them; thus retaining them till the period of their second birth; which happens in somewhat less than three months, when they emerge from the back of the parent in their complete state. During the time of their concealment, however, they undergo the usual change of the rest of this genus, being first hatched from the egg in the form of a Tadpole; and gradually acquire their complete shape, some time before their exclusion. This species inhabits the obscure nooks of houses in Cayenne and Surinam, and has a granulated back, with three longitudinal ranges of larger granules.

PIPE-FISH. (*Syngnathus.*) There are several species of this genus, the distinguishing characters of which are, that the body is greatly elongated, slender, and covered with a series of indurated plates, arranged in parallel lines; that the nose is long and tubular; that the gills are arranged in small round tufts along the branchial arches; and that there are no ventral fins.



PIPE-FISH.—(SYNGNATHUS.)

The GREAT PIPE-FISH (*Syngnathus acus*) is one of the most common species found on our coasts, sometimes among sea-weed at

pectorals are small and slightly rounded; and the tail is of a corresponding shape and size. In spring, the ova of this genus are found lying in a longitudinal division at the lower part of the abdomen; and from these are hatched the young, completely formed.

The LITTLE PIPE-FISH (*Syngnathus ophidion*) is about five or six inches long, slender, nearly cylindrical, and tapering off to a point. It wants both the pectoral and caudal fins; and is covered with a smooth skin, whereas the other kinds are covered with a sort of crust. They are either olive green, or tinged with yellowish-brown.

But by far the most extraordinary species is the FOLIATED PIPE-FISH (*Syngnathus foliatus*). In its general shape it is greatly allied to the *Hippocampus*, but is considerably longer: its great singularity, however, consists in certain large leaf-shaped appendages with which the back, tail, and abdomen are furnished; these appendages are situated on very strong, rough, square spines or processes, and, were it not for the regularity of their respective proportions, might be mistaken for the leaves of some kind of fucus adhering to the spines. The colour of the whole animal is a dusky olive, thickly sprinkled on all parts, except on these appendages, with small, round, whitish specks, and accompanied by a kind of metallic gloss on the abdomen: the fins are soft, tender, and transparent. This remarkable species is a native of the Indian seas.

PIPING CROW. (*Barita tibicen.*) A striking bird, by some placed among the Shrikes, by others among the Crows. As the crow in the fable was proved unable to sing or chant, and as our present bird is decidedly most musical, his *talents would* remove him from that despised group, even if his characters were not somewhat different. It is a common species in New South Wales, whence it is not unfrequently brought alive to this country. The visitors to the Zoological Gardens in the Regent's Park cannot have failed to be amused with his peculiar musical pipe

Europe, inhabiting mos
lowland heaths and mar
slender bird than the
SHORE PIPIT (*Anthus aqu*
the sea coast, and is ver
inland. It is larger and
and is a superior songster

PIPRA. A genus of I
comprehending the diffe
nakins. They are for the
of the warmer regions of A
for the brilliancy of the
have a compressed bill, h
emarginate, with great na
tail and limbs are short;
proportions occasioned th
garded as allied to the Tit
woods, are very active, a
short, but quick.

In Mr. Edwards's narrat
up the Amazon,' he says,
their different varieties,
family, the most numerous
responding much in the
Warblers. "They are t
rally having black bodi
yellow, red, white, and oth
perpetual motion person
about the branches and lo
piping their sharp notes;
a feeding-tree, almost defy

PITHECIA. The name
of South American Monk
KEY.]

PLACUNA. A genus
Mollusca, family *Ostracea*
compressed, thin, equivalve
lateral; planorbicular, fl
and nearly transparent;
most noted species is the *P*
or Chinese Window Oyster,
windows, lanthorns, &c., i
is used here. The valves,
so thin as to appear to tou
consequently exceedingly f
also use the powder of this

Pleuronectes platessa.] This ...ies of *Pleuronectidæ*, or ...distinguished from others ...s shape and colours, being ...t, and of a fine pale brown ...th on the body and fins by ...itely large orange-coloured ...whole of the under part is ... behind the left eye is a ...ies, reaching as far as the ...f the lateral line; the ...mall, the lower jaw longer ...nd both furnished with a ... When near the ground ... and horizontally; but if ...d, they sometimes change

...ONECTES PLATESSA.)

...the vertical position, dart-...meteor-like rapidity, and ...y resuming their inactive ...om of the water. Plaice ...and young crustacea, and ...seen taken on our coasts ...pounds, but a fish one-half ...sidered very large. The ...ed Diamond Plaice, are ...sex coast. These fish are ...eem as food, though by ...to the Turbot and Sole. ...ate size are reckoned the

...a genus of Molluscs, re-...*vianella*, very abundantly ...uth America, and the Isle ...hell is small and oval, the ...of few whorls; outer lip ...rticulated within; oper-...horny, with a terminal

...S. The name given to a ...ous insects, comprehend-...the inferior pair of wings ... superior ones, and are ...rmesith at their anterior ...rgins are multi-articulate, ...than the head; the max-...orter than the head, and ...four or five joints. The ...pelson) and Termites are ...ibe.

...A genus of snails, chiefly ...r the banks of rivers, and ...es from the form of the ... of a flattened orb, occa-...tions being coiled on the ...r of the species are com-...in; and fossil species are found in the freshwater strata of the Isle of Wight, and in the neighbourhood of Paris.

WEST INDIA PLANORBIS. (P. GUADALOUPENSIS.)

PLANTIGRADA. (Lat. *planta*, the sole of the foot; *gradior*, I march.) The name of a tribe of carnivorous Mammalia, which apply the whole or part of the sole of the foot to the ground in walking, &c. The Bears, Racoons, Badgers, &c. are examples of Plantigrade Carnivora.

PLANT-LICE. [See APHIS.]

PLATESSA. A sub-genus of the *Pleuronectidæ*, or flat-fish family, comprising the Flounders, Plaice, &c.

PLATYCERCUS. A genus of the Parrot tribe, which derives its name from its fine wide tail: there are many species, most of which are natives of Australia. As an example, we may cite the PENNANTIAN or BLUE-CHEEKED PARRAKEET (*Platycercus Pennantii*). This beautiful Parakeet is very generally dispersed over New South Wales, its true habitat, and is chiefly found on the ranges of grassy hills and brushes. Although much variation exists between the plumage of these birds in youth and maturity, the colouring of the sexes when fully adult is alike. "The head, neck, all the under surface, the rump and upper tail-coverts, are of a rich deep crimson-red; the feathers of the back and scapularies black, broadly margined with rich crimson-red; the cheeks and shoulders cerulean blue; the greater wing-coverts pale blue; the primaries and secondaries black, with the basal half of their external webs margined with deep blue; the two centre tail-feathers green, passing into blue on their margins and at the tip; the remainder black on the inner webs for three-fourths of their length; deep blue for nearly the same length on their outer webs, and largely tipped on both webs with pale blue, which becomes still paler to the tips of the feathers; bill horn-colour; irides very dark brown; feet blackish brown." It breeds in the holes of the large gum-trees; the months of September, October, and November constituting the breeding season. It makes no nest, but deposits from four to seven white eggs on the rotten wood at the bottom of the hole. In disposition this species is tame and familiar; few can exceed it in interest or beauty; and consequently it is one of the commonest living Parakeets sent from Australia to this country. The plumage of the young birds

all the large species of Monkey-like animals belonging to the New World. They are characterized by having thirty-six grinders (being four more than the others); the tail, in general, long; and in some species prehensile; no cheek-pouches; posteriors hairy and without callosities; nostrils opening on the sides of the nose, and not underneath. [See MONKEY.]

PLECTOGNATHI. The name of an order of fishes, in some measure connecting the osseous with the cartilaginous kinds; comprehending those which have the jaws formed by the maxillary bones being anchylosed to the sides of the intermaxillaries.

PLESIOSAURUS. The name of a genus of extinct marine Saurians, of gigantic dimensions, which may be thus described: the head short, somewhat oblong, and obtuse; the neck extremely long, consisting of about thirty-three vertebræ; body elongated; tail short; nostrils small; teeth numerous, lodged in small alveoli; ribs composed of two parts, the one vertebral and the other ventral, the vertebral column consisting of about ninety joints.—That in the earlier periods of animal existence reptiles were created of much greater dimensions, and were far more numerous in proportion, than at present, seems evident from the discovery and examination of the organic remains which from time to time have come under the observation of men of science; and there is scarcely any one more entitled to our notice, on account of its extraordinary form than the Plesiosaurus. Its neck is five times the length of its head; the trunk of the body four times the length of the head; and the tail three times; while the head itself is only a thirtieth part of the whole body. From the whole physiology of the animal, Mr. Conybeare says, that it was aquatic is evident

enabled it to
for its prey.
sauri occur in
chel-chalk to
most common
clay beds. T
land, and have
and Germany.
"It is of the
land, "that C
have been the
racters altoget
have been yet
former world.
united the tee
enormous leng
serpent; a tru
portions of an
of a chameleon
Such are the
and structure
the remains o
thousands of
lions of extinc
earth, are at le
researches of th
our examinati
as the bones of
upon the earth
remains of the
Museum. [See

PLEURONE
rine Mollusca,
ternal shell; n
slightly convex
is found in the
ranean.

PLEURONE
family of Mala
known by the a
are distinguish
Fishes, but eve

their white sides, and they then with great rapidity; but they to their usual posture, and glide sort of undulating motion near They are found along the shores ll countries; and are, generally holesome and agreeable food. Plaice, Turbot, Flounder, &c. are *Pleuronectidæ*.

TOMA. A genus of Mollusca eastern and tropical seas, and many species, both recent and shell is turreted or fusiform;

LEUROTOMA BABYLONICA.

ribbed or striated transversely; al, terminating anteriorly in an anal; outer lip thin, with a fissure nion with the spire: operculum horny. The species *Pleurotoma* found on the British shores. Our we the shell and the mouth of ecies, the *Pleurotoma Babylonica*, h the carnivorous mollusc pro-

TULA. A genus of Conchiferous found both in a recent and fossil e shell is irregularly ovate, in- attached by a small part of the one valve; sides strongly and ly grooved; one valve more convex other; hinge with two cardinal ch valve and the cartilage placed hem.

S. A genus of swimming birds, to the *Pelecanidæ*. Mr. Gould has the species PLOTUS NOVÆ-HOL- s follows:—"*Male:* An arrow- ed mark of white on the throat; ripe of the same colour commences of the mandibles, extends for inches down the sides of the neck, nates in a point; head, neck, and per surface of the body *greenish* ed with brown *and with a patch* *red in the centre of the under* *throat; under surface deep glossy* greenish black; wings and tail shining black; all the coverts with a broad stripe of dull white, occupying nearly the whole of the outer and a part of the inner web, and terminating in a point; scapularies lanceolate in form, with a similar shaped mark of white down the centre, and with black shafts, the scapular nearest the body being nearly as large as the secondaries, and having the outer web crimped and the inner web with a broad stripe of dull white close to the stem; the secondaries nearest the body with a similar white stripe on the outer web, close to the stem; centre tail-feathers strongly and the lateral ones slightly crimped; orbits naked, fleshy, protuberant, and of a yellowish olive, mottled over with brown specks; irides of three colours, the ring nearest the pupil being dull orange-buff; to this succeeds another of marbled buff and brown, and to this an outer one of orange-buff; naked skin at the base of the lower mandible wrinkled and yellow; upper mandible olive, under mandible dull yellow, both becoming brighter at the base; feet yellowish flesh-colour, becoming brown on the upper part of the outer toes.—*Female:* Upper surface blackish brown, each feather margined with grayish white; under surface, buffy white. In other respects similar to the male. Total length, 36 inches; bill, 4; wing, 13½; tail, 9; tarsi, 2. Inhabits the rivers of the whole of the southern coast of Australia. [For habits of Plotus, see DARTER.]

PLOVER. A genus of birds, in many respects allied to the Wader tribes, but generally partaking of the nature of land birds, and therefore more properly classed with them. Many, as Bewick remarks, breed upon our loftiest mountains, and though they are sometimes seen feeding upon the sea shores, yet they are no more water birds, on that account, than many of our small birds which repair thither for the same purpose. They are gregarious, and are generally seen in meadows or on the sea shore, in search of food, which they procure by stirring the earth or mud with their feet, and thus inviting worms and aquatic insects to the surface. They are generically distinguished by a large full eye; the bill is straight, short, and rather swollen towards the tip; the head large; legs naked above the knee; and most of the species are without the hind toe.

The RING PLOVER (*Charadrius hiaticula*, Linn.) is very abundant on the sea-coasts of Great Britain. Its plumage is grayish-brown above, white beneath, with a black or dark brown collar on the lower part of the neck, very broad anteriorly; the head marked with black and white, and the beak yellow, tipped with black; orange-coloured legs. It generally breeds on heaths not far from the coast.—Another British species is the KENTISH PLOVER (*Ch. Cantianus*), less deeply coloured, with longer and black legs, and a rufous occiput. It is almost always to be seen as a frequenter of shingle-beaches.

GOLDEN PLOVER. (*Charadrius pluvialis.*) The length of this bird is about ten inches.

On all the upper parts of the plumage the feathers are indented on the edge with bright yellow spots upon a dark brown ground; the front of the neck and the breast are the same, but much paler; the belly is almost white; the quills are dusky; the tail is marked with dusky and yellow indentings and bars; the legs are black; and the bill is dusky. The Golden Plover is common in this country and all the northern parts of Europe; it is also very numerous in various parts of America, migrating from one place to another according to the seasons. It breeds on high and heathy mountains; and the female lays four eggs of a pale olive colour, variegated with irregular umber-brown blotches. The young, when excluded, are covered with a beautiful particoloured down of bright yellow and brown; they quit the nest as soon as hatched, and follow their parents till able to supply and support themselves, which is in the course of a month or five weeks. The old birds display great anxiety in protecting their young brood, using various stratagems to divert the attention of the enemy. When aware of an intruder near, the female invariably runs to some distance from her nest before she takes wing, a manœuvre tending to conceal its true situation; and the discovery of it is rendered still more difficult by the colour and markings of the eggs assimilating so closely to that of the ground and surrounding herbage. The usual call-note of the Plover is a plaintive monotonous whistle, by imitating which it may frequently be enticed within a very short distance. In the breeding season a more varied call is used, during which it flies at a great elevation, and continues soaring round for a considerable time. Towards the end of August the Plover leaves the moors, and descending to the cultivated vales, gets fat by picking up the larvæ and worms in the newly-sown wheat fields; but as the winter draws on it moves to the coast, where it remains until the approach of spring. In autumn the flesh of the Plover is scarcely inferior to the woodcock; but it was more esteemed formerly than at present. The "Plover's eggs" frequently seen at the tables of the opulent and luxurious, are not those of the Golden Plover, but of the Lapwing. Plovers fly in small flocks, and make a shrill whistling noise, by an imitation of which they are sometimes enticed within gun-shot. When merely wounded they run so fast that they often escape. While tending the brood, the old birds employ a number of stratagems to divert the attention of any one approaching them. Like the Lapwing, they feign lameness, tumble over as if unable to fly; and then, after running for some distance, they take wing and perform many gyrations in the air before they again alight. Scarcely any difference is observable between the male and the female. In young birds the plumage inclines more to gray, and the yellow spots are not very distinguishable.

There are several other species of Plovers, some of which are peculiar to America, and others common to both continents. [See DOTTEREL; LAPWING, &c.]

PLUME [MOTHS]. A
collectors to different specim
genus *Alucita*.

PLUSIA. [See MOTH: C

PLYCTOLOPHUS. A
belonging to the *Psittacidæ*.

The LEADBEATER'S Co
tolophus or *Cacatua Lead*
the Cockatoos yet discovere
at once the most beautiful
the genus. Its general pl
the forehead, front and si
centre of the under surfa
middle of the abdomen, an
tion of the inner webs of
tinged with rose colour, be
salmon-colour under the w
the occipital crest crimson
a yellow spot in the cent
the tip; bill light horn-co
brown. It enjoys a wide
southern portion of the A
nent; it never approaches
sea, but evinces a decided
the belts of lofty gums and
the sides of the rivers of th
country. Few birds tend m
monotonous hues of the A
than this beautiful specie
coloured wings and glowing
T. Mitchell, "might have
air of a more voluptuous
examples, in the possession
Derby, appear to bear cont
as well as any of their con
disposition they are not s
animated, but they are less
Birds of Australia.)

PNEUMORA. A genus
insects, remarkable for the
ance of their abdomen, wh
semble an inflated balloon
the Cape of Good Hope, wh
species are common, call th

PNEUMORA VARI

their swollen appearance.
make is very great. The
delicate green or rose tint
spotted with silver.

PODARGUS. A genus
birds, natives of Australia,
strictly nocturnal. During

ers sleeps so soundly on
of a tree that it is almost
use it; and Mr. Gould re-
frequently shot one with-
e mate close by. It does
e its prey on the wing, but
trees in search of it. It
shifting the outer toe back-
ring is short and concave,
carelessly interwoven, and
of a branch. The female
o eggs, which are white,
ts in incubation.

, the PODARGUS CUVIERI, distinguished from the pre- being much less robust, f smaller in size and alto- der, is almost exclusively emen's Land. Like the the genus, it feeds princi- pterous and other insects, in its habits. It displays ness in the capture of its flies by day, its whole being passed in a sitting ted branch, perfectly mo- s not easily to be roused, g, either by the discharge other noise. "Like the ould, "it is considered by omen, principally from the nd of its hoarse, unearthly bles the words *more-pork* to it by the colonists); it es the immediate vicinity it emits this sound while verandahs and on the ives; and it is often to on the tombstones of the onsiderable variation ap- the colour of the plumage; s in some being a dull ashy ers they are a rich chest- altogether it may be cha- ed and minutely freckled ts and dark brown. The atly formed and flat; and o white eggs.

e Podura are small insects , are found in damp places, the bark of trees, &c. they suddenly spring to a the help of a long forked hich is bent forwards be- n; and it is by the sudden hat the leap is produced. cts are commonly known f Spring-tails. One of the this genus is the *Podura* us, a minute black insect in vast numbers, particu- inks of ponds, and some- surface of the water itself.

(*Proathemadera cincinna-* species of the family of is about the size of a a native of New Zealand, the scattered islands in The general colour is a lack, with strong varying ecompanying the general ck and wings; the rump a rich deep blue; and the larger wing-coverts white, forming a bar of white across the wings. The feathers of the neck are of a loose silky texture, rather long, and curving slightly upwards at the tips; but the principal mark of distinction in this elegant bird is a moderately large and lengthened pendent tuft of broad white feathers curving upwards at the tips, and situated on each side the neck: the bill is black and slightly curved; and the legs are black. This bird is greatly valued by the natives of the Southern Islands; its glossy plumage often contributing to the ornaments of the feathered mantles worn by their chiefs. As a song-bird also it has considerable merit; and it is said that as a delicious food it is one of the greatest luxuries afforded by the woods of New Zealand.

[For further interesting particulars from the pages of the Rev. Mr. Yate, an accurate observer, who resided long in New Zealand, see PROSTHEMADERA.]

POEPHAGOMYS. A genus of Rodent animals found in South America. They have narrow incisors; the auditory couch

POEPHAGOMYS ATER.

small, but distinct; and claws adapted for burrowing. The only well-ascertained species is *Phoephagomys ater*, which is a native of Chili. It has also been described under the name SPALACOPUS.

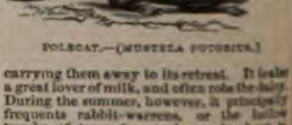
POËPHILA. A genus of Passerine Birds, belonging to the Finch family, and deriving their name from their fondness for grass-seeds, on which they feed. We may specify, from Mr. Gould's Birds of Australia,

The POEPHILA LEUCOTIS, or WHITE-EARED GRASS FINCH. It is a native of Australia, and has a band crossing the forehead, lores, throat, and a large patch on each flank, deep velvety black; ear-coverts, a narrow line beneath the black of the throat, and a space surrounding the black patch on the flanks, white; crown of the head deep reddish chestnut; all the upper surface and wings deep cinnamon-brown; chest and abdomen pale vinous brown; upper and under tail-coverts white, the former margined externally with deep black; tail black; irides dark brown; feet red; bill yellowish horn-colour. Like the other members of the genus, it inhabits the open spots of country, and feeds on grass-seeds.

POINTER. (*Canis familiaris avicularis.*) The Pointers are a breed of valuable sporting dogs. They are used in finding feathered game of various sorts, partridges, pheasants, &c. When they scent their game, they *suddenly stop*, and remain motionless as a statue,

until the sportsman comes near enough, and is prepared to take his shot; he then gives the word, and the Dog immediately springs the game. So admirably have these Dogs been trained, that their acquired propensities seem almost as inherent as a natural instinct, and appear to be transmitted from parent to progeny: at least, they now require but very little *breaking* to stand at any kind of game. Their scent and sight are equally acute. In all probability Spain is the native country of this valuable Dog, which is found there and also in France with very slight difference of form; but the English breed is much to be preferred, for good temper, beauty of appearance, docility, patience, and activity. "Those Pointers," says Johnson, in his Shooter's Companion, "which I have seen direct from Spain, are heavy and clumsily formed; those from Portugal are somewhat lighter; while the French breed is remarkable for a wide furrow which runs between the nostrils, and give to the animal's countenance a very grotesque appearance. They are all thick and heavy, with large chubby heads, long pendent ears, and short smooth hair; they are often ill-tempered and snappish, and, in fact, are good for little in this country till they have been crossed with the more generous blood of these islands. Yet the conjunction of the Setter and Pointer is by no means advisable. Excellent Pointers have been produced by the Foxhound and the Spaniard. In crossing with the Spanish Pointer, the deep-flewed Hound is to be preferred, and from judicious crossing excellent Pointers are to be met with in most parts of England. They differ from the Setter, as, when they have approached sufficiently near the game, they stand erect, whereas the true-bred Setter will either sit upon his haunches, or lie close to the ground, generally the latter. Pointers often suffer much from sore feet. I have generally found white-footed Dogs much more tender in this respect than those whose feet are of a dark colour. Pointers are sometimes used with bells round their necks in cover-shooting. When the Dog sets, the ringing ceases, and the shooter proceeds to the spot. Pointers are very susceptible of education, and not so apt to forget their lessons as the Setter; and their speed, strength, and persevering spirit, enable them to continue the chase for a length of time almost incredible." "I have heard my father, a man of close observation, and an enthusiastic sportsman," observes Mr. Bell, "offer the opinion that the stand of the Pointer and the crouching of the Setter are but the natural start of surprise or interest, which all dogs give when coming suddenly upon the scent or sight of their natural prey; modified of course by cultivation, and by transmission through many generations, each, by education, improving upon the capabilities of the former."

POLECAT, FITCHET WEASEL, or FOUMART. (*Mustela putorius.*) This animal is known by each of the names here given, but most frequently by the first. It is one of the most remarkable European species of the Weasel tribe, and is found in most parts of Europe, as well as in some of the Asiatic regions. Its colour is a deep blackish-brown, with a tawny cast slightly intermixed: the ears are edged with white, and the space round the muzzle is also whitish. It is about seventeen inches in length, exclusive of the tail, which is about six inches. In its habits it greatly resembles the other Weasels; it preys indiscriminately on the smaller animals, is very destructive to poultry, and most inimical to rabbits, which it destroys like the ferret, by sucking their blood, instead of immediately tearing them to pieces, so that, it is said, a single Polecat is often sufficient to clear a whole warren; and twenty rabbits have been found dead, which one Polecat had destroyed, and that by a wound which was hardly perceptible. It steals into barns, pigeon-houses, &c., where it occasionally makes great havoc, biting off the heads of fowls and pigeons, and then



POLECAT.—(MUSTELA PUTORIUS.)

carrying them away to its retreat. It is also a great lover of milk, and often robs the dairy. During the summer, however, it principally frequents rabbit-warrens, or the hollow trunks of trees, &c., and prowls about in quest of young birds, rats, and field-mice. Sometimes it forsakes the field, the wood, and poultry-yard, to roam by the rivulet's side, and indulge in its propensity for fish. The Polecat is a strong and active creature, and will spring with great vigour and celerity when preparing to attack its prey, or to escape from pursuit; at which time it arches its back considerably to assist its effort. It is of a smell proverbially fetid, being furnished, like several others of the Weasel tribe, with a pouch or follicle beneath the tail, which secretes a thickish fluid of a particularly strong and offensive odour. The fur of the body is of two sorts; the shorter being woolly, of a pale yellowish or fulvous colour; the longer, shining, and of a rich black or brownish black; which, though far less valuable than either that of the Sable or the Marten, is still much esteemed; and numbers of the skins are annually imported here from the north of Europe, under the name of *Fitch*. The spring is the season in which the Polecat breeds, generally producing three or four at a birth, which the parent is said to suckle but a short time, accustoming them early to suck the blood of the animals which she brings to them, as well as eggs, &c. The Polecat has been known to breed with the Ferret; nay, it is asserted to be a practice with warreners, in order to improve the breed of the latter, to procure a wild breed from time to time, which are of a re-

esdy to bite at any bait that may
o them. The under jaw is longer
pper; the head and body rise
; and the lateral line is incur-
g towards the middle of the back,
g, and running straight to the
is broad and of a brownish co-
ack is dusky, inclining to green:
e marked with yellow streaks;
is slightly forked. Fine speci-
Pollack are taken at Scarborough,
s the name of Leet. It is also
astings, Weymouth, and on the
coast, and bought by the inex-
s Whiting. Hand-line fishing
, Mackerel, &c. is called *whiffing*.

RUS. A genus of rapacious
frequent the extratropical parts
nerica, and in their habits (ac-
Mr. Darwin) well supply the
ir carrion-crows, magpies, and
ribe of birds not known there.
will observe that we have fre-
lled ourselves of valuable zoo-
mation contained in that gentle-
nal of Researches;' and in this
are largely indebted to the same
he following graphic ornitho-
rvations, which we have only
dged.

with the *Polyborus Braziliensis*.
mmon bird, and has a wide geo-
nge; it is most numerous on the
nals of La Plata (where it goes
e of Carrancha), and is far from
throughout the sterile plains of
The Carranchas, together with
s *Chimango*, constantly attend
the estancias and slaughtering-
an animal dies on the plain the
mmences the feast, and then the
s pick the bones clean. These
ough thus commonly feeding
e far from being friends. When
ne is quietly seated on the branch
r on the ground, the Chimango
ues for a long time flying back-
rwards, up and down, in a semi-

active, tame, and cowardly bird. Its flight is heavy and slow, like that of an English rook. It seldom *soars*; but I have twice seen one at a great height gliding through the air with much ease. It runs (in contradistinction to hopping), but not quite so quickly as some of its congeners. At times the Carrancha is noisy, but is not generally so: its cry is loud, very harsh, and peculiar, and may be likened to the sound of the Spanish guttural *g*, followed by a rough double *r r*. Perhaps the Gauchos, from this cause, have called it Carrancha. Molina, who says it is called Charu in Chile, states, that when uttering this cry, it elevates its head higher and higher, till at last, with its beak wide open, the crown almost touches the lower part of the back. This fact, which has been doubted, is quite true. I have seen them several times with their heads backwards in a completely inverted position. The Carrancha builds a large coarse nest, either in a low cliff, or in a bush or lofty tree. To these observations I may add, on the high authority of Azara, that the Carrancha feeds on worms, shells, slugs, grasshoppers, and frogs; that it destroys young lambs by tearing the umbilical cord; and that it pursues the Gallinazo, till that bird is compelled to vomit up the carrion it may have recently gorged. Lastly, Azara states that several Carranchas, five or six together, will unite in chase of large birds, such as herons. All these facts show that it is a bird of very versatile habits and considerable ingenuity.

"The *Polyborus Chimango* is considerably smaller than the last species. It is common on both sides of the continent, but does not appear to extend so far northward as the last species. We have already remarked that it feeds on carrion, in common with the Carrancha. It is generally the last bird which leaves the skeleton; and may often be seen within the ribs of a cow or horse, like a bird in a cage. The Chimango often frequents the sea-coast and the borders of lakes and swamps, where it picks up small fish. It is truly omnivorous, and will eat

They actually pounced on a dog that was lying fast asleep close by one of the party; and the sportsmen had difficulty in preventing the wounded geese from being seized before their eyes. It is said that several together (in this respect resembling the Carranchas) wait at the mouth of a rabbit-hole, and together seize on the animal when it comes out. They were constantly flying on board the vessel when in the harbour; and it was necessary to keep a good look out to prevent the leather being torn from the rigging, and the meat or game from the stern. These birds are very mischievous and inquisitive; they will pick up almost anything from the ground; a large black glazed hat was carried nearly a mile, as was a pair of the heavy balls used in catching cattle. Mr. Usborne experienced during the survey a more severe loss, in their stealing a small Kater's compass in a red morocco leather case, which was never recovered. These birds are, moreover, quarrelsome, and very passionate; tearing up the grass with their bills from rage. They are not truly gregarious; do not soar; their flight is heavy and clumsy; on the ground they run with extreme quickness, very much like pheasants. They are noisy, uttering several harsh cries; one of which is like that of the English rook; hence the scalers always so call them. It is a curious circumstance that, when crying out, they throw their heads upwards and backwards, after the same manner as the Carrancha. They build on the rocky cliffs of the sea-coast, but only in the small islets, and not in the two main islands. This is a singular precaution in so tame and fearless a bird. The scalers say that the flesh of these birds, when cooked, is quite white, and very good eating."

POLYGASTRICA. The name given by Ehrenberg to the most minute and simple kinds of Infusorial Animalculæ that exist. They occur in all parts of the world, and differ according to diversity of climate, region, kind of water, &c.; and though they

more or less abundant
disposed around the m
they produce a vortex
a supply of alimentary
necessary to state, th
this subject has occupi
many learned naturali
ordinary discoveries ha
years, the nature of th
life of these Animalcule
great mystery; and the
too comprehensive for u
into any of the details
rious scientific opinions

POLYNEMUS, or
group of Abdominal Fi
to the warmer latitude
by the rays of the pe
tended into long fila
loosely on each side of
a singular and beautif
fishes of this genus are
in their colours; and a
licious as articles of food
of the body somewhat
Perch.

"Considerable interes
Polynemi on account
coveries, which tend to
duce isinglass in cons
The attention of the
logical Society (says M
directed to this subject
the December number
Oriental Herald, says
pears a letter on the S
and the isinglass it affo
the anonymous writer,"
attains about four fee
squaliform, resembling
appearance, but exhibi
structure. The meat o
ingly coarse, and is conv
when salted and spice
piquant relish, well kn
tables of Bengal. The
may be considered the

when, quite unexpectedly, he
etter from Mr. M'Clelland, in
naturalist stated that he had
is fish, and found it to be the
le of Hamilton's 'Fishes of the
moreover discovered that an
f that species weighing two
d yield sixty-five grains of pure
article which in India sells at
s (1l. 12s.) per pound. Think-
probable that other species of
esides the *P. Sele* will yield
Cantor proceeds to give a short
ose species which came under
n while attached as surgeon to
ble Company's Survey of the
e Gangetic delta.
ies best known,' says the author,
nemus Riesa of Hamilton (*Pol.*
vier; the TUPSEE, or MANGO-
Anglo-Indians): this inhabits
engal and the estuaries of the
enters the mouths of the rivers
up than Calcutta during the
on (April and May), when the
ered in its highest perfection,
lly sought as a great delicacy.
is the smallest, for its length
eds eight or nine inches, and
lf or two inches in depth.' It
e for the great length of fila-
e rays, of the pectoral fins, these
twice the length of the body,
number on each side."
w's Zoology is a curious and in-
ount (taken from Bruce's Tra-
cies called *Polynemus Niloticus*.
ding to Mr. Bruce, who describes
t in the appendix to his Travels,
cies, and may vie, both for the
ts form and its taste, with any
g the rivers running either into
anean or the Ocean. The spe-
which Mr. Bruce's figure was
ed thirty-two pounds, but it is
arrive at the weight of seventy
ore. It is an inhabitant of the
here it is by no means uncom-
up the river as Syene and the
t: the whole body is covered
f a brilliant silver colour, so as
spangles lying close together;
no variety of tinge on the fish,
de of red on the end of the nose,
and fleshy.
informed by Mr. Bruce, that in
e this fish the Egyptian peasants
etty large mass or cake, consist-
clay, flour, honey, and straw,
with their feet till it is well in-
they then take two handfuls of
reak them into pieces about the
oint of a finger, and stick them
parts of the mass, into the heart
y put seven or eight hooks with
them, and a string of strong
each; this mass of paste is then
y the fisherman or shepherd into
the man sitting for this purpose
up goat-skin. When arrived at
he drops the *mass in the deepest*
stream, and cautiously holding
ach of the strings slack, so as
not to pull the dates and hooks out of the middle of the composition, he makes to shore again, a little below the spot where he has sunk the mass, and separating the ends of the strings, ties each of them, without straining, to a palm-branch fastened on the shore, to the end of which is fastened a small bell. He then goes and feeds his cattle, or digs his trenches, or lies down to sleep: in the mean time the cake beginning to dissolve, the small pieces of date fall off, and, flowing down the stream, are eagerly seized on by the fishes as they pass; they rush up the stream, picking up the floating pieces as they go, till at length they arrive at the cake itself, and voraciously falling to work at the dates which are buried in it, each fish in swallowing a date, swallows also the hook in it, and feeling himself fast, makes off as speedily as possible: the consequence is, that in endeavouring to escape from the line by which he is held, he pulls the palm-branch to which it is fastened, and thus gives notice of his capture by ringing the bell. The fisherman runs, and having secured the fish puts a strong iron ring through his jaw, ties a few yards of cord to it, and again commits him to the water, fastening the cord well to the shore. This is practised in order to preserve the fish ready for sale, since fish in general, when dead, will not keep long in these regions. It is rarely that on those occasions a single hook is found empty."

There are several other species found in the Indian, African, and American seas, bearing a tolerably near resemblance to the Mango-fish before described.

POLYODONTA. A name applied by Lamarck and De Blainville to the *Ark-shells*, &c. of collectors, comprehending the forms collected by Linnæus under the genus Arca. The word signifies "many-toothed;" and the family is defined by Lamarck:—"cardinal teeth small, numerous, entering, and disposed in each valve in either a straight, a curved, or a broken line."

POLYOMMATUS. A genus of diurnal Lepidoptera, so called from many of the species having numerous eye-like marks on the under side. There are many British species.

POLYOMMATUS ARGUS; or LEAD BLUE BUTTERFLY. The male of this insect has the wings above deep blue, tinged with lilac, the hinder margin broad and black, the costa white; beneath grayish-blue: anterior wings with a central ocellus, behind which is a bent series of six ocelli; and the hinder margin with a double band of black spots: posterior wings with three ocelli at the base placed obliquely; a triangular discoidal spot, with a large black dot in the centre; behind this a waved series of ocelli, and a band of orange tawny, containing several brilliant silvery blue spots on a black ground, and bordered internally with a series of black crescents, and externally with whitish: the outer margin of all the wings black; cilia white. The female is brown above, the disc sometimes bright blue, with or without a marginal tawny band; beneath grayish, with the ocelli larger

and more distinct than in the male, and a dentated white band traversing all the wings, between the ocelli, and the fulvous band; cilia brown. Caterpillar green, hairy, with whitish tubercles; a reddish-brown dorsal line, edged with white, another on the sides, and some oblique stripes of the same; head and true legs brown: it feeds on common food and saintfoin. Chrysalis at first green, afterwards brown.

POLYOMMATUS ARION; or ARION BUTTERFLY. This insect is considered one of great rarity, and is usually found on commons and pastures early in July. Wings above brown, with a blue disc, or blue with a brown margin posteriorly; anterior with a central transverse black spot, behind which is an undulated row of black bars, disposed longitudinally; the posterior wings have some obsolete ocelli towards the hinder margin: beneath, dusky ash-colour; the anterior wings with about eight ocelli, forming an undulated band near the hinder margin, all with a black pupil and white

ARION BUTTERFLY.—(POLYOMMATUS ARION.)

iris: on the hinder margin are two rows of black wedge-shaped spots, with a pale dot attached to each; the cilia white, with brown bars beneath: the posterior wings with the base blue-green, and having an angulated row of four ocellated dots, followed by a transverse discoidal crescent, and then by

P. ARION.—UNDER SIDE.

an interrupted angulated and waved band, consisting of eight ocelli, the inner but one being frequently double; beyond this, on the margin, are two rows of lunulated dots; cilia as in the anterior wings. Body dusky, with bluish hairs above, hoary beneath: antennæ black, annulated with white. It is occasionally caught in the vicinities of Dover, Winchester, and Bath.

POLYOMMATUS ARTAXERXES; or SCOTCH ARGUS BUTTERFLY. This unassuming species of the papilionaceous tribe was until lately supposed to be peculiar to Scotland; but it is no longer so, as instances are given of its having been met with in the north and west of England. It frequents meadows and grassy places, congeners, and makes its appearance in June, and again in August. The above are in both sexes black brown, discoidal white spot on the outer sometimes on the posterior; they have an orange-coloured band; fringe brown at the base: beneath, the wings have a central white spot, which and the posterior margin similar spots, followed by a broad coloured band, terminating external white spot with a black pupil, and in a series of black and white crescents the margin of the posterior wings is continued; there is a large white on its interior edge, and between it base of the wing are several scattered spots. Like its congeners, however subject to considerable variations.

POLYOMMATUS CORYDON; or CHALK BLUE BUTTERFLY. In all chalky districts this pretty butterfly abounds cially on the downs, and under the near Dover; in various parts of the Wight, on the beds of chalk round chester; and in many other similar tions. The wings above are of a rich silvery-blue, with the hinder margin nervures dusky, and cilia white: interior wings with five sub-ocellated the hinder margin: beneath, the wings are whitish, ocellated, and with two or three spots towards the the wing: beyond the undulated ocelli is an interrupted brown stripe tween which and the hinder margin series of sub-ocellated dots, with a circle: posterior wings cinereous, blue at the base, with four ocellated at the base, and eight forming an band behind the middle; the pupils with a white iris; in the centre of between the bands, is a white sub-tri spot; and on the hinder margin is a ocellated black spots, with a white marked internally with orange; which is connected by a pure white oblong the external ocellated band: cilia white the female, the fulvous-orange spots hinder margin of all the wings more distinct than in the male, and the browner.

POLYOMMATUS ADONIS; or CLIFTON BUTTERFLY. This truly beautiful is extremely local, but still very ful on all the Sussex downs and

t. The male is of a most lovely azure
ilvery blue, varying in lustre; now
ng a tinge of green, and now of lilac,
rding to the light in which it is presented
the eye; the hinder margin of all the
gs marked with a slender black line,

P. ADONIS — FEMALE.

silla white, interrupted by brown: be-
th, the anterior wings are whitish, with
s distinctly ocellated; the margin with
fulvous ocelli of a deep hue, and the
ned colour deep. The female is of a
p brown, with a black discoidal spot, the

P. ADONIS — UNDER SIDE

frequently bluish; the hinder margin
the posterior wings with a slightly ocel-
d fulvous streak; and the colour beneath
h darker than the male, and the ocelli
e distinct. Caterpillar green, with dorsal
s of fulvous spots: it feeds on clover.
ysalis green, or brown.

OLYOMMATUS ALEXIS; or ALEXIS BUT-
FLY. This, the commonest of our blue
terflies, is seen disporting itself by the
s of grassy lanes, in meadows, and in
sky places, wherever we go. Two broods
ke their appearance, the first in May, the
in August. Male, above of a bright
e blue, with the costa of the anterior

ALEXIS BUTTERFLY.
(POLYOMMATUS ALEXIS.)

ngs white, and a slender marginal black
s to all the wings; the fringe usually
ite; the anterior wings have two ocelli
and transversely towards the base of the
ng, then an ovate *central spot with a*
ssenger black streak, followed by a regu-
y curved transverse series of ocelli, seven
in number; between which and the outer margin are a row of dusky lunules, edged with fulvous, and a series of dusky spots on a whitish ground; the extreme margin is

P. ALEXIS — UNDER SIDE.

black: the posterior wings are usually bluish at the base, with four ocelli placed obliquely towards the inner margin; the disc has a triangular white spot, with black centre, behind which is a waved series of eight or nine ocelli, externally bordered with a fulvous patch, the extreme edge of which is black; and a white blotch connects the

P. ALEXIS — CATERPILLAR AND CHRYSALIS.

fulvous band with the waved series of ocelli. Female, above brown, with the disc more or less blue: beneath, all the wings are deep ash-colour or drab, with all the ocelli very distinct and large. Caterpillar bright green, slightly hairy, with a dark dorsal line, and triangular yellow spots: it feeds upon the wild strawberry, and grasses. Chrysalis dark brown.

POLYPI: POLYPIARIA. The animals belonging to this extensive and remarkable class possess an organization so low in the scale of being (by which we mean, that the distinctive characters of animal life are so slightly developed), that there is very considerable difficulty in distinguishing many of them from the cryptogamic families of the vegetable kingdom; and, accordingly, we find in the works of the older botanists that the *Zoophytes*, generally, were arranged with the Sea-weeds and Mosses; nor was any idea entertained of their possessing a different character. That such should have *been the* case can excite the wonder of no *person* who merely regards the apparent *structure* of these plant-like animals. They see that a bulb is formed, which shoots up

into a stem, and sends off branches; that there is also a root is evident, which, however, we now know is merely the organ of attachment, affording no nourishment to the animal. Most of the Polypi form compound animals, attached to one another by lateral appendages, or by their posterior extremity, participating in a common life, while at the same time they enjoy their individual and independent existence. In reference to the different views which have been entertained on this once questionable subject, Mr. Broderip makes the following just observation: "Borrowing from Aristotle and Pliny the term Polypus, by them applied to a cephalapod, the systematic naturalists who followed Linnæus collected under this title many really animalized masses in the form of plants, and after abundant examinations by Ellis and others, of the membranous, horny, or stony 'fulcra,' bases, or axes, which remain after desiccation or decay of the softer parts, generally agreed in opinion that to all these plant-like bodies were associated active living animals like the Hydræ described by Trembley. As in a tree the flowering and reproductive organs manifest more active and varied functions than the general mass of bark and wood which serves to unite them in one common life, so in these Zoophyta the little Polypi expanding from their cells for food, light, or aeration, and shrinking back upon the agitation of the water, or withdrawal of the light, seemed like so many animal flowers, which might be studied apart from the Polyparia which they adorned. They were in fact studied apart, and unfortunately attention was more directed to the wonderful permanent fabric, or 'Polypidom,' as Lamouroux calls it, than to the Polypi themselves. Hence the imperfection of all the schemes of classification for this portion of the Zoophytic division of the animal kingdom, and many of the erroneous generalizations and hypotheses regarding the lower forms of animal life."

POLYPTERUS. This is a fish, which is usually about eighteen inches in length, and partakes in some degree both of the cartilaginous and cartilaginous kinds, but seems most nearly allied to those species of the genus *Esox* which are furnished with large scaling, and bony scales. Its shape is elongated and nearly cylindrical: its head is defended by large bony pieces or plates, and the body covered with large and strong scales, very closely affixed to the skin: the pectoral fins are placed immediately behind the head, the ventral at a vast distance beyond it, the abdomen in this fish being of a very unusual length; the anal fin is seated very near the tail; and the tail is of a rounded or ovate form. At a small distance beyond the head, along the whole length of the back, runs a continued series of small dorsal fins, varying in different individuals from sixteen to eighteen: each of these fins is of an ovate shape, upright, or but very slightly inclining backwards, and is furnished with a very strong spine at its base, while the remaining part consists of four or five soft and branched rays, connected by their united membrane. The lateral line runs nearly straight [illegible] gill-covers to the tail: the eyes [illegible] and round; the mouth of moderate [illegible] a row of small and sharp teeth in [illegible] and the upper lip furnished with [illegible] small and short tentacula at its [illegible] fish inhabits the depths of the Nile, [illegible] ing among the soft mud, which it [illegible] to quit only at particular seasons [illegible] sometimes taken in the fishermen's [illegible] the time of the river's decrease. [illegible] is sea-green, paler or whitish on the [illegible] which is marked by some irregular [illegible] spots. It is called by the Egyptians [illegible] and is said to be one of the best [illegible] Nilotic fishes for the table.

POLYTHALAMIA. The name [illegible] by Ehrenberg to minute calcareous [illegible] many-chambered Mollusca, both recent [illegible] fossil. They are also called *Foraminifera* [illegible] by D'Orbigny. [See INFUSORIA.]

POMFRET. (*Stromateus.*) A genus [illegible] Acanthopterygious fishes, having the [illegible] compressed form as the Dory (*Zeus*), [illegible] same smooth epidermis; but the mouth [illegible] blunt, and not retractile. It has [illegible] dorsal, and a few concealed spines anal, [illegible] but no ventrals. The vertical fins are [illegible]

POMFRET.—(*Stromateus niger*.)

ended as in the scaly-finned fishes; the [illegible] has a number of spines attached [illegible] membrane. They are found in the [illegible] Mediterranean, the Indian Ocean, and [illegible] Some of the species differ considerably [illegible] form. The one here represented is the Black Pomfret (*Stromateus niger*).

POMOTIS. A genus of fish, belonging [illegible] the *Percidæ* family. The Northern Pomotis (*Pomotis vulgaris*) frequents the [illegible] tered inlets of Lake Huron and the [illegible] that vicinity, concealing itself, in the [illegible] mer time, beneath the broad leaves [illegible] nuphar and water-lily, where it is [illegible] readily taken with a hook baited [illegible] small fish or worm. The form of the [illegible] is a broad oval, the anterior spine [illegible] acute, and formed by the lower jaw, [illegible] projects slightly beyond the upper [illegible] is about eight or nine inches long; the [illegible] is much compressed; the scales adhere [illegible] to the skin and are rather large; the [illegible] small, and the opposing surfaces of [illegible] mandibles are covered with small [illegible] crowded closely together. The branchiostegous rays are considerably curved, [illegible] the caudal fin is slightly almost [illegible] extremity with rounded lobes. Its [illegible] food is small crustacea.

drumanous animal, being Orang-Outang, found in zed by the extraordinary nd incisor teeth, and by relieved with hair of a See ORANG-OUTANG.)

ns of diurnal Lepidop- merous species, a few of ome of the exotic species beautifully marked with mong the British species e common White Butter-

E, OF CABBAGE BUT- mmon and destructive pearance in our gardens May, and lays its eggs f cabbage leaves. Both pper surface of all the the tip of the anterior , the patch on its inner d, and the extreme tip rated with white: be- surface of the anterior the base slightly irrorated

LE.—(P. BRASSICÆ.)

o transverse spots adorn- posterior wings are pale nked with dusky. The re black above and white w, however, several va- erly; slightly differing

CHRYSALIS OF THE CA —(CUNTIA BRASSICÆ.)

he Caterpillar is bluish- ellow longitudinal lines, e others on the sides: several tubercular spots, l hair; the tail is black. in a few days, and con- er till the end of June: nd a convenient place to they fasten their tail by a strong thread of silk ar of their body; after the chrysalis (which is greenish, spotted with black, with three yellow stripes) is perfectly formed; and in about six days the butterfly appears. The eggs laid by the second brood produce caterpillars which feed during the remainder of the summer, and remain in the pupa state during the winter, to be hatched in the succeeding spring. So prolific is this destructive species, that were it not for the ichneumon fly, which deposits her eggs within the body of the caterpillar, and in the larva state continues to prey on its vitals, the ravages of this insect would be of the most serious consequence to our vegetable productions.

PONTIA (*Anthocharis*) CARDAMINES; ORANGE-TIP, or WOOD LADY BUTTERFLY. This beautiful species is commonly seen during the month of May, whether we walk in the garden or stroll through the green lanes. The upper surface of all the wings in both sexes is white, with the base dusky; in the male the anterior wing is marked with a small black lunule, from which a deep fulvous spot extends to the tip; the tip itself being black or dusky: the posterior wings have a few dusky spots on the edge: beneath, anterior wings white, with a white lunule in the centre, the costa marked with a few black dots, and the tip varied with a greenish yellow; the posterior wings in both sexes are alike beneath; they are white, prettily marbled with green and yellow. The body is black above and white beneath; antennæ white, annulated with light brown. The caterpillar is green, with a longitudinal stripe placed above the legs; it feeds on the *Cardamine impatiens*, *Brassica campestris*, &c. The Chrysalis is either green or brown, with a fulvous spot on the wing-cases in the male; the middle is swollen and conical, with the extremities much produced and fusiform.

PORCELLANA. A genus of *Anomurous Crustacea*, in general form resembling that of the *Brachyura*, and distinguished by a fan-like caudal fin. The carapace is subcircular and depressed above. The pincers

FLAT-CLAWED PORCELAIN CRAB. (PORCELLANA PLATYCHELES.)

are strong, and little or not at all dentated: the three succeeding pairs of feet are nearly cylindrical, and terminated by a conical tarsus. The species here figured, *Porcellana platycheles*, is found on the coasts of England and France, and is about seven lines long, and of a brownish colour.

PORCELLIO. A genus of *Isopoda*, distinguished from the *Oniscí* (true Wood-lice)

ST. MARTIN'S PAROCHIAL LIBRARY

by the number of joints of their lateral antennæ, which are only seven. They are

PORCELLIO GRANULATUS.

found under stones, old logs of wood, &c. Their food consists of decayed vegetable and animal substances; they move slowly when in danger; and they seldom come forth from their retreats except in damp weather.

PORCUPINE. (*Hystrix.*) A genus of Rodent quadrupeds, characterized by having the clavicles imperfect, two incisor teeth in each jaw, and four molars, both above and below, on each side: these have flat crowns, surrounded by a line of enamel, which enters into both edges, and appears to divide the tooth into two portions; the muzzle is thick and truncated; the lip divided; the tongue furnished with spiny scales; the ears short and rounded; the fore feet furnished with four toes; and the hind ones with five, all armed with thick nails. Many of them live in burrows, and have much the habits of rabbits; but their grunting voice, joined to their large and truncated muzzle, has caused them to be compared to the hog. The singular appearance of this animal, so different from that of the generality of quadrupeds, must in the earliest ages have attracted the attention of even the most incurious: the variegated spines or quills with which it is covered naturally suggesting the idea of a fierce and formidable animal: it is, however, of a harmless nature, and the quills are merely defensive weapons, which, when disturbed or attacked, the animal erects, and thus endeavours to repel his adversary.

The COMMON PORCUPINE (*Hystrix cristata*) is a native of Africa, India, and the Indian Islands; and is also found in some of the warmer parts of Europe. When full grown, it measures about two feet in length, independent of the tail, which is five or six inches. The upper parts of the animal are covered with long, hard, and sharp quills; those towards the middle and hind part of the body being longer than the rest, very

COMMON PORCUPINE.—(HYSTRIX CRISTATA.)

sharp-pointed, and measuring from ten to twelve or fifteen inches in length; they are variegated with several alternate black and white rings; and their root, or point of attachment, is small. In they lie nearly flat upon points directed backw animal is excited, they raised. The head, belly with strong dusky hai softer hairs; and on th hair is very long, and The Common Porcupine the earliest ages, has gi fables, among which received is, that it po darting its quills wit considerable distance ued. Perhaps in shak of its body, like other sometimes cast off a fe some distance, and the animal that may ha way: and this may h popular idea of its dar against its enemies. peds, the subject is tha the smallest irritation shakes them with gre them to that quarter danger of being attac the object of its reac at the same time. W occasion of this sort, animal was moulting that they would fly a few yards, with sev points of them against struck; and it is not l cumstance of this kind to an opinion of its po more effectual mann armature does not ap well understood: th position, however, is, defence, as, like the power of rolling itself presenting a phalanx that renders the att fruitless. The Porc on roots, fruit, bark, substances: it inhabits retreats, which it is a compartments or dir single hole or entra its burrow during th excursions for food by animal, and becomes The female produces

The CANADA POR ata.) This is a very animal, approaching of a Beaver, and pe Northern States of the It is not provided w remarkable in the con ture consisting of sho concealed by the hai intermingled. It is a is remarkable for the its fur, which is soft, e and intermixed wit hairs with whitish ti tion nose, black, the ve the body very stron back armed with

t as their spines may
pable of seriously in-
animals that incau-
the Porcupine. This
at amongst the roots
hen not occupied in
nd other vegetables,
ts time in sleeping.

PORCUPINE (*Hystrix*
Brazil and other parts
ere it inhabits woods,
w to the branches of
the manner of some
Monkey tribes. Its
t a foot, and the tail
The whole animal,
l insides of the limbs,
trong, and very sharp
ngest measure three
with black tips. The
ith which the under
dusky brown. The
re extremely blunt;
nd strong; and the
l: the feet have four
claws, and a tubercle
: the tail is covered
a third part of its
er being naked, and

name given to the
organized beings in
including the marine
ges; in which the
ic structure does not
n alone, but is equally
ernal arrangement of
beings are composed;
in fact, beyond the
as far reproduction.
acteristic of an animal
s vital action which
ordinary state being
fluid through their
e.]

sus vulgaris.) Of all
the closely allied va-
ed the most common,
all the European seas
coasts. It greatly re-
delphinus delphis), and
ical with it; but may
d by its shorter snout,
aller size. It rarely
six feet; is of a thick
arts, and gradually
l, which is horizontal
like that of other
a bluish black or a
e, and nearly white
k fin, situated rather
e head, is somewhat of
d placed nearly up-
r spout-hole is upon
of a semilunar form,
y by a cartilaginous
is of moderate width;
and numerous. *The*
with a coat of fat,
ness, beneath which
d muscular, resem-

bling that of the hog. The Porpoise feeds on small fish, such as the Herring and Mackerel, of which they destroy great numbers: they root about the shores with their snout in quest of food, like hogs, and are believed to act in concert when in pursuit of their prey, urging them from one bay or estuary to another, deterring them from the shallow water, and driving them towards each other's ambush, with all the art of a well-trained dog. Before a storm, they may be seen gambolling and *tumbling* about (as it is termed) in the ocean, and they are occasionally observed to congregate together in large numbers. Their flesh was formerly considered a great delicacy; but is now seldom eaten. The term *Porpoise*, *Porpesse*, or *Porpus*, is said to be derived from the Italian *Porcopesce*, or hog-fish, from the supposed resemblance of its projecting snout to that of the Hog.

PORTUGUESE MAN-OF-WAR. (*Physalia atlantica.*) The name given by early English voyagers to a species of *Physalia*, belonging to the group of *Hydrostatic Acalephæ*. It is an inhabitant of the seas of warm climates, but a shoal of them are sometimes driven into our bays, particularly on the south-west coast; and it has been very probably mistaken for *Argonauta Argo*, the Paper Nautilus, by those who have declared that they have seen fleets of the latter sailing. These Acalephæ are characterized by the presence of one or more large air-sacs, by which great buoyancy is given to them; and it would appear that they have considerable power over these organs. The species we are now describing possesses a

PORTUGUESE MAN-OF-WAR.
(PHYSALIA ATLANTICA.)

single large air-sac, beneath which the digestive apparatus is disposed; and the sac is surmounted by a sort of crest, which possesses considerable muscular power, and is elevated entirely above the water, when the animal is floating at the surface. The air-sac is provided with two orifices, one at each extremity, through both of which air is forced out when the bag is compressed by the hand; each of these orifices is provided with a little circular muscle, which usually keeps them closed, but which allows of their dilatation during the continuance of the outward flow

of air. By means of this organ, it appears, they either force out the air, or compress it into a much smaller compass, when they wish to sink; and distend the sac when they desire to rise. From the under side of the air-sac there is a mass of short flask-shaped appendages hanging down, which are terminated by suckers, with an orifice in each. Whilst the lower surface of the air-sac is not itself above six inches from one end to the other, the tentacula sometimes hang down like fishing lines, to an extent of fifteen or sixteen feet. They generally possess an active stinging power, and are also very contractile, so that they are able to draw up the prey which they have attacked. It would seem that the short suckers are attached to the bodies of animals thus entrapped; and that the *Physalia* derives its nourishment by imbibing their juices through the pores of these numerous cirrhi.

PORTUNIDÆ, or FIN-FOOTED CRABS. A family of Brachyurous Crustacea mostly found in the seas of warm climates, and vulgarly called *Paddling Crabs*. They are in general remarkable for the flatness and great transversed extent of their

SPOTTED-FIN CRAB.—(LUPA CRIBRARIA.)

carapace, which in breadth is more than double its length. Their general form does not ordinarily differ much from that of the greater part of the Cancerians. The last pair of legs is flat and oar-like; a structure which enables these crabs to swim with great ease: hence some of the species are found at a great distance from land. Some of these are found on our own coasts, one of which, the small common Crab, is hawked about London, and eaten by the poorer classes; but the one here figured is the *Lupa cribraria*, which inhabits the coasts of Brazil: it is about three inches in length; of a yellow colour, with numerous whitish spots.

PORZANA. A genus of birds belonging to the family *Rallidæ*; by most authors it is included in the genus *Ortygometra*, the type of which is our COMMON CRAKE (*O. crex*). To it belongs the SPOTTED GALLINULE (*O. Porzana*), a species which is not very common in Britain; on the upper side it is of an olive-brown colour, with dusky streaks and white spots; beneath, it is of an ashy-olive, with white spots. Mr. Gould describes a fine species in his Australian Birds. This is the PORZANA (Ortyg.) FLUMINEA, or SPOTTED WATER-CRAKE. This Grallatorial bird inhabits various parts of Australia; and, like its European ally (*Rallus po*
næus) frequents morasses, reed
neighbourhood of rivers cloth
herbage; but the uniform gr
breast and under surface, and
are characters by which it is
guished from it. The whole
surface is of an olive colour,
stripe of blackish brown dow
and two oval spots of white, b
and below with black on the
web of every feather; primar
daries brown; tail dark bro
with lighter brown, and with
of white spots on the extrem
throat, chest, and upper part o
dark slate-gray; lower part o
and flanks grayish-black, cros
irregular bars of white; und
white; bill orange-red at the
olive-green for the remainder
feet dark olive-green.

POTOO. (*Nyctibius Jamai*
bird is a native of Jamaica, a
the *Caprimulgidæ* family.
inches long, and in expanse f
each wing thirty-three inche
Plumage mottled with black,
and white; the white prev
tertiaries, tertiary-coverts, and
black upon the primaries and
the tail-feathers barred tra
black on a gray ground, and d
tied; tail broad, very sligh
inner surface of the wings
with white. On each side of
black streak; a bay tint pr
breast; and some of the feath
broad terminal spots of black,
pale gray; but every feather
plumage is marked with a bla
the centre. The beak is blac
sagittiform, slender towards
verted barbs along the edges.
coloured or brilliant straw-
whitish, and scurfy.

"The Potoo is not unfreq
the evening, taking its stati
sunset on some dead tree or
floating by on noiseless wing,
which the common people su
Its plumage has the soft, pe
character which marks that of
which prevents the impact of
the air from being audible, so
the power and length of these
and then it is seen by day;
concealed in the bushy foliage
tree, which it can with diffic
to quit, distrustful of its power
it sits in the fading twilight
anon utters a loud and hoar
sometimes the same syllables
a much lower tone, as if pr
the depth of the throat. a
judge of the habits of the P
Mr. Gosse) from what little I
of it when at liberty, and from
of my captive specimens, I
notwithstanding the powerful
but little; but that, doing
observation, it watches the

rings by, on which it sallies captured it with its cavern- outh, returns immediately Mr. Swainson appears to e stiff bristles with which gidæ are armed have a a to the size and power of ies and large moths, while s are not needed in the ey consisting of 'little soft re is a species, whose prey d most rigid beetles, of large set with formidable horns, true rictal bristles at all. en that which serves this it is simply a round flat nches wide, and little more , composed of the fibrous l Man's Beard (*Tillandsia* as found on the ground on e Potoo bird had just risen. permanent inhabitant of mmon in the lowlands of the probably is generally dis- sland: it is found also in *Birds of Jamaica.*

See KANGAROO RAT.]

rcoleptes candivolvus.) A ped of South America, re- mours somewhat in its struc- , but closely allied to (*Cassa*), and, like it, con- ing to the order *Carnivora.* ound ears; short nose; a length; a large prehensile ike a squirrel, holding the s. It is a nocturnal ani- to a Lemur, with agility; a great destroyer of wild captivity it is very mild, t the chairs, &c. in a room, at large. [See KINKAJOU.]

E [also called QUOIT- name, in Oxfordshire and nities, for a fossil found in nging to the Sea-eggs or dairy-women in these coun- se them as pound weights:

OG. (*Arctomys Ludoviciana* MOT.]

E. (*Glareola.*) A genus of e Plovers. They are cha- short, hard, convex bill, rds of half its length, and rds the point, legs feathered nce; toes, three before and ws long, and drawn to a fine ry large, the first quill-fea- ; tail more or less forked. of nine inches. In Mr. f Europe,' he observes that *la* appears to be strictly con- World, no Transatlantic ex- er been discovered. It may ly a native of the eastern ope on the Asiatic borders, Hungary, *where wide tracts of lands, abounding in lakes saline, and traversed by* mighty rivers, afford it food and security. It is also abundant in Western Tartary. In England it is only an occasional visitor, but in Germany, France, and Italy, it is a bird of periodical occurrence. "With the long wings and forked tail of the swallow," says Mr. Gould, "the Pratincole possesses that rapidity and power of flight for which the bird is so remarkable. It takes its food, which consists of insects, and especially such as frequent marshes and the borders of rivers, while on the wing, darting along in the chase with the rapidity of an arrow; nor is it less distinguishable for celerity on the ground, and often catches its prey as it nimbly runs along. This elegant and graceful bird incubates in the concealment afforded by reeds, osiers, and tall herbage, laying three or four white eggs." A few months ago we had the pleasure of seeing specimens of this curious bird, brought alive to the Zoological Gardens by Mr. Fraser. They seemed to be moping and unhappy.

PRAWN. (*Palæmon serratus.*) A crustaceous animal; a species of *Macroura*, or Long-tailed Decapod, well known, and esteemed as an agreeable article of food. The species ordinarily sold in the fish-shops is the *Palæmon serratus.* It is generally about three inches long, and of a pale red colour, which is brightest in the antennæ, and especially in the swimmeret of the tail. Its frontal spine extends beyond the peduncle of the middle antennæ: it is curved upwards at the tip, with seven or eight spines above, and five beneath. They are taken on many parts of the British coasts, but are by no means so abundant as Shrimps. Some of the exotic species acquire a very large size. [See PALÆMONIDÆ.]

PRION. A genus of oceanic birds, belonging to the *Procellaridæ* or Petrel kind. They are distinguished by a strong, stout, and wide bill, very much depressed, the upper mandible convex on the sides, terminated by a compressed hook; the edges furnished internally with cartilaginous la-

BROAD-BILLED PETREL.—(PRION TITTATUS.)

mellæ; nostrils opening by two distinct orifices, and disposed in the form of a short tube. No hind toe, but in place of it a very small claw. In a letter addressed by Mr. *Gould* to the Zoological Society, dated Van Diemen's Land, May 10. 1839, several interesting particulars are detailed relative to oceanic birds observed by him on his voyage

Mr. Gould crossed the equator on the 7th of July, having been more than twenty days within the tropics, part of which time the vessel lay becalmed. On the 23rd July (lat. 31° 10′ S., long. 24° W.) they were surrounded by the feathered race. Independently of an abundance of Cape Petrels, two other species and three kinds of Albatrosses were observed. A few days after this, they commenced running down their longitude, and from that time until they reached the shores of Van Diemen's Land, several species of *Procellaridæ* accompanied the ship. Mr. Gould found the Australian seas inhabited by their peculiar Storm Petrels (*Thalassidroma*), four distinct species of which he had already observed since leaving the Cape. "From the westerly winds which prevail in the southern hemisphere," adds Mr. Gould, "between the latitudes 38° and 55°, I am induced to believe that a perpetual migration is carried on by several members of the oceanic family continually passing from west to east, and circumnavigating this portion of the globe. This remark more particularly refers to the Albatrosses, Prions, and other large kinds of Petrels; the same individuals of several of these species having been observed to follow our ship for some thousands of miles. Until I had ascertained that they were nocturnal, it was a matter of surprise to me how the birds which were seen around the vessel at nightfall were to be observed crossing our wake at daybreak on the following morning, the ship having frequently run a distance of nearly a hundred miles during the night."

PRIONODON. A genus of quadrupeds, of which the type described by Dr. Horsfield is *P. gracilis*, a native of Java, partaking of the structural character both of the *Felidæ* and *Mustelidæ*; though in its general economy and habits it resembles the former only. It has a long, annulated, and cylindrical tail; light brown body, with four very wide dorsal bands and two narrow anal bands; two broad lateral striæ, the narrow cervical striæ, the numerous humeral and femoral spots, and the seven caudal rings, very deep brown. Mr. B. H. Hodgson has lately described other species of this genus from India.

PRIONUS: PRIONIDÆ. A genus and family of Longicorn Coleopters. These insects only fly in the evening or during the night, and always settle upon trees. They are known by the following characters:—Eyes emarginate; head not narrowed behind into a neck; mandibles very large; palpi moderately long; labium small; the antennæ inserted between the base of the mandibles and the eyes; and the thorax generally square or transverse, and denticulated at the sides. The perfect insects are generally of dark colours, and are usually found on the trunks of trees: they are very inactive during the day, but take flight in the twilight. Several curious species are found in South America and in India: but not many inhabit Europe. The transformations of *Prionus coriarius* are thus described:—The larva, a broad, flattish, white grub, with the body gradually narrowed towards the posterior extremity, and divided into a head of moderate size, thirteen segments and an anal lobe; the mandibles are very powerful, but small and triangular, and are employed in gnawing the wood,

STAG BEETLE.
(PRIONUS CORIARIUS.)

upon which the insect feeds. When full fed, it forms a large cocoon, chiefly composed of chips of gnawed wood, wherein it passes its pupa state; the antennæ at this time lying along the sides of the body, over the elytra: before the larva undergoes its change to a pupa, it instinctively bores a hole close to the outer surface of the tree, in order that the escape of the perfect insect may be the more readily effected. The genus comprises a very great number of species, which, from the variety in the form and size of their mandibles, antennæ, thorax, and abdomen, are divisible into many smaller subgenera. Some (chiefly exotic species) have the body elongated, straight, with the thorax much shorter than the abdomen, and greatly curved at the sides, and the mandibles of large size in the males. Others have the body not so oblong, somewhat depressed in front, and with moderate-sized mandibles in both sexes, and the antennæ strongly serrated in the males. The one here figured is the *Prionus coriarius*; the larva live in the wood of the Quercus pedunculata tree, and are eaten by the natives of South America. The largest of the tribe is also a native of South America: it is called *Prionus gigantæus*, and well merits the name.

PRIVET HAWK MOTH. [See SPHINX LIGUSTRI.]

PROBOSCIDEÆ, or PROBOSCIDIANS, a term applied to those Pachydermatous animals which are distinguished as possessing a prolonged prehensile snout or proboscis, and having five toes on each foot, included in a very firm, horny skin; active, [illegible]

IS MONKEY. [See Mon-

ARIA. [See Petrel.]

S. A genus of Brazilian birds
or the enormous width of their
ch enables them to swallow the
al berries, on which, as Mr.
rs, they wholly subsist, and not
Cuvier asserts. Although, he
erfectly resemble the swallows
ection of their bills, their wings
ed for rapid flight; and their
h stronger, and calculated for
ong branches for their food. In
ions Mr. Swainson frequently

RUPIDÆ. A family of Hy-
insects, consisting of numerous
es, distinguished by having the
y destitute of, or with but very
and the body being extremely
ades. Their colours are gene-
varied with brown: some fre-
e plants, whilst others are found
situations, and the greater part
with great agility. They are
nd some are so extremely small
ble only to the naked eye when
the glass of windows opposed to

OPS. A genus of birds, many
remarkable for the beauty of
e, and its singular arrangement.
n extensible tongue; and feed
soft fruits, and the saccharine
nts.

n Promerops (*Promerops su-*
r feet in length from the tip of
e end of the tail; the tail being
ng in proportion to the body,
icate and slender. In this re-
embles the Birds of Paradise,
habitants of the same region;
es in the metallic lustre of its
The feathers of the head, neck,
art of the body, are of a glitter-
d soft as the finest velvet. The
purple or violet hue: the wings,
ssess a velvety texture, appear
or black, according to the light
y are held; and the brilliancy
and wing-coverts may well be
olished steel. On each side the
f the body beneath the wings is
moderately long group of loose-
ndent, brownish feathers; in
ell as in some other points, it
ed to the *Paradiseæ*. The legs
race length, strong, and black.
w Guinea.

BILLED Promerops. (*P. ery-*
.) This elegant species, which
f Africa, is about fifteen inches
The general colour is black, with
ges of red, violet, and golden
red cast predominates on the
ium on the *wing-coverts, and the*
he back and tail: the latter is
f emarginated, the outside feathers
ast three inches long, and the
rest gradually lengthening to the two middle-most, which measure about eight inches: all the tail-feathers, except the two middle ones, are marked near the tip by an oval white spot on each side the web; the first six quill-feathers of the wings have also a white spot on the inner web near the tip: the bill is rather long, slender, moderately curved, and of a red or orange colour, as are likewise the legs, which are rather disproportionately short.

PROMINENT [MOTHS]. A name applied by collectors to different species of Moths, of the genera *Notodonta*, *Leiocampa*, *Ptilodontis*, and *Lophopteryx*.

PRONGBUCK, or Prong-horned Antelope. (*Antilocapra furcifera.*) A species of Antelope, inhabiting the extensive plains of the centre and west of North America in vast herds. It is about four feet four inches long, and three feet high; the whole form of the animal being peculiarly graceful and elegant. The horns rise perpendicularly from the front of the skull, and are perfectly straight till within two or three inches of the tips, when they curve suddenly inwards in the form of a hook: the horns below the

Prongbuck.—(Antilocapra furcifera.)

prong are like the antler of a deer, but above they are round, black, and polished. The ears are long and pointed, the eyes large and animated, the tail short and bushy. The hair, which in the summer season has the ordinary texture and appearance of other Antelopes, becomes as the winter approaches long and tubular, and so inelastic that when pressed it crushes like a dry reed: on the head, ears, and legs the fur is close and smooth, but down the back of the neck it is six inches in length, and forms a mane. The general colour is pale fawn, the under parts being white; a broad disc of white surrounds the tail; and there are two transverse white bands on the throat. Like some other species, it migrates from north to south, according to the season, but is never found to inhabit forests or closely-wooded districts. It is an active and vigorous and-

mal, though less enduring in its speed than most other Antelopes.

PROPITHECUS. A genus of quadrupeds allied to the *Lemurs*, but distinguished from them by its shorter muzzle and its rounded ears, as well as by the marked disproportion in length between its hinder and anterior extremities, the greater length of its hands, and the shortness of its anterior thumb. *Propithecus diadema:* Length of body and head, twenty-one inches; tail, seventeen inches. Face nearly naked. Above the eyes, the long, silky, waved hairs which cover the body commence by a band of yellowish white crossing the front and passing beneath the ears to the throat; the back of the head and neck clothed with black hair, which is freely intermingled with white on the shoulders and sides, the white gradually increasing towards the posterior portion of the body: the under surface white throughout.

PROSCOPIA. A genus of Locusts peculiar to South America; which have a membranous pellet between the terminal hooks of the tarsi, the antennæ filiform, and the posterior legs long and approximated to the intermediate pair, which are remote from the anterior pair. [See LOCUST.]

PROSTHEMADERA. A genus of birds belonging to the family of the *Honey-eaters*. It contains the POE-BIRD (*Prosthemadera cincinnata*), a Passerine bird of New Zealand, the native name of which is *Tui*. It is thus described by the Rev. W. Yate, a missionary

POE BIRD.—(PROSTHEMADERA CINCINNATA.)

there, belonging to the Church Missionary Society. "This remarkable bird," says the writer, "from the versatility of its talents for imitation, has, by some, been called 'the Mocking-bird;' and, from its peculiar plumage, has by others been denominated 'the Parson Bird.' It is so restless in its disposition, as to seem incapable of remaining in one situation, or unemployed, for a single moment. There is not a note of any bird of the woods but what it exactly imitates; and when confined in a cage, it learns with great ease and correctness to speak long sentences. It imitates dogs, cats, turkeys, geese, and, in fact, every sound which is repeated a few times in its hearing. Its size is that of the thrush; and its plumage a beautiful glossy black, with a few very fine white hairy feathers scattered about the head and breast, a few stronger ones about the nostrils, and two small clusters of long white feathers hanging down from the neck upon the breast, resembling a pair of clerical bands. Its eye is penetrating, and its voice peculiarly mellow. Its general food is fine and small insects, which it is very expert in catching; supplying itself in a very short time with great abundance. It also feeds upon the berries of various plants, and will not reject earthworms. This bird seems to associate with every other warbler of the wood; and, next to the ground-lark, is found in the greatest number of all the birds of New Zealand. It is delicious eating. It seems to be of a tender constitution, short-lived, and not able to bear the extremes of either heat or cold."

PROTELES, or AARD-WOLF. (*Proteles Lalandii.*) A carnivorous animal, about the size of a full-grown fox, inhabiting the southern parts of Africa. The genus Proteles, of which, as far as is at present known, this is the only species, resembles both the Civets and Hyænas; the teeth and pointed head resembling the former, while its striped fur, and the stiff bristly hair which runs along the neck and back, give it the appearance of the latter. The body is covered with coarse woolly fur, the general colour being a yellowish gray, radiated with transverse stripes of dusky black; and the tail is short and bushy. It has five toes on the fore-feet, but only four on the hinder ones; the claws on all being large and strong. It burrows like a fox, and, like that predatory animal, it ventures abroad at night only in search of its food, which consists chiefly of carrion and the smaller kinds of vermin.

PROTEUS. A very singular amphibious reptile, peculiar to certain subterranean waters, or underground lakes, of the Tyrol. It is very eel-like in its appearance and movements, but has four short limbs. The waters in which it dwells are sometimes dried up; and when this happens, it buries itself in the mud. They retain their external gills through life, the lungs not being developed sufficiently to maintain respiration by themselves. It is particularly found in the great Cave of Adelsberg, and

(PROTEUS ANGUINUS.)

is known to the inhabitants of the country *Behl Ribs*, while the Germans call it *Water Fish*. A live specimen was exhibited at the Linnæan Society in June, 1847, by a gentleman who had it in his possession for eighteen months. The water in which it resides is strongly impregnated with carbonate of lime, but the party was not aware on what it fed.

The name Proteus is [illegible] an influential [illegible]

…t may choose to swallow for its

…OTETRAMERA. The third …tion of the Coleoptera, comprising …es which have the tarsi apparently …d, although in reality consisting …ts, the fourth being so exceedingly …to have escaped the notice of the …matists, who gave to these in… …ectional name of Tetramera. The …bean feed upon vegetable matter, …found in their perfect state upon …aves, or the bark of trees: the …fleshy grubs. Latrelle divides …n into seven groups or families — …cophora (Curculio); Xylophaga …æ); Platysoma (Cucujus); …es (Cerambyx); Eupoda (Crio…yellea (Chrysomela); and Clavi…stylidæ).

…YRUS. A genus of Hymenop…ecta belonging to the family *Apidæ*. …ely the insects of this genus were …d with the Humble-bees (*Bombus*), …many respects they nearly resemble, …widely from them in others; viz. …e no nests of their own, neither …collect food for their young, but, …cuckoo among birds, they deposit …in the nests of others, and leave …ng to be hatched and reared by …hey may be distinguished also from …by the structure of their hinder …tibia being narrower and covered …at with hair.

…ACIDÆ. The name of a tribe …rial Birds, of which the Parrot …pe. They are characterized by …rt, hard beaks, which are generally …ched, and surrounded at the base …ed skin, in which are the orifices …trils. They are natives of tropical …

…spherous, while the pupa has rudimental wings.

PSOPHODES. A genus of birds belonging to the family *Meliphagidæ*; it contains the PSOPHODES CREPITANS, or COACH-WHIP BIRD. This is a shy and recluse bird, peculiar to South Australia, and renowned for the singularity of its note, which is loud and full, ending sharply like the cracking of a whip — whence its name. It rarely exposes itself to view, but keeps in the midst of the densest foliage and among the thickest climbing plants, through which it threads its way with the utmost ease. Its actions are always animated and sprightly, but particularly so in the spring, when the males may often be seen chasing each other, while they make the brushes ring with their clear and voluble song, or rather whistle. The male has the head, ear-coverts, chin, and breast black; on each side of the neck is a large patch of white; all the upper surface, wings, flanks, and base of the tail-feathers olive-green; the remaining portion of the tail-feathers black, the three lateral feathers on each side tipped with white; under surface olive brown; bill black; feet reddish-brown. The female may be distinguished by her more obscure plumage and smaller size. The food consists of various kinds of insects, mostly obtained from the ground by scratching up the leaves and turning over the small stones. Besides its peculiar shrill song, an idea of which it would be difficult to convey in words, it possesses a low inward song of considerable melody.

PSYLLA: PSYLLIDÆ. A genus and family of Homopterous insects, similar in their general habit, as well as in their saltatorial powers and deflexed wings, with some of the *Cicadæ*. They subsist in all their states upon plants, and have received specific names from the various trees and …

about fifteen inches long, or nearly the size of the Red Grouse. The bill is black; orbits bright red; the upper parts of the body pale brown or ash, mottled with small dusky spots and bars; the head and neck with broad bars of black, rust-colour, and white: the under parts are white, as are also the wings, excepting the shafts of the quills, which are black. In winter this plumage is changed to a pure white, except that in the male there is a black line between the bill

PTARMIGAN.—(LAGOPUS MUTUS.)

and the eye. The tail consists of sixteen feathers; the two middle ones ash-coloured in summer, and white in winter; the next two are slightly marked with white near the ends, the rest are wholly black; and the feathers incumbent on the tail, and nearly covering it, are white. The Ptarmigan, or White Grouse, is fond of lofty situations, and is found in most of the northern parts of Europe, even as far as Greenland: in this country it is only to be met with on the summits of some of our highest hills, chiefly in the Highlands of Scotland, in the Hebrides and Orkneys, and sometimes, but rarely, on the lofty hills of Cumberland and Wales. The female lays eight or ten eggs, which are white, spotted with brown: she makes no nest, but deposits them on the ground. These birds fly in small flocks, and feed on the wild productions of the hills: their flesh is dark-coloured, and has somewhat the flavour of the hare.

PTERICHTHYS, or WINGED FISH. A fossil genus of fish found in the Old Red Sandstone by Mr. Hugh Miller, and described by him in his interesting geological work. "Imagine," says he, "the figure of a man rudely drawn in black on a gray ground, the head cut off by the shoulders, the arms spread at full, as in the attitude of swimming, the body rather long than otherwise, and narrowing from the chest downwards; one of the legs cut away at the hip joint, and the other, as if to preserve the balance, placed directly under the centre of the figure, which it seems to support. Such, at a first glance, is the appearance of the fossil. The body was of very considerable depth, perhaps little less deep proportionally from back to breast than the body of the tortoise; the under part was flat, the upper rose towards the centre into a roof-like ridge, and both under and upper were covered with a strong armour of bony plates, which, resembling more the plates of the tortoise than those of the crustacean, received their accessions of growth at the edges or sutures. The plates on the under side are divided by two lines of suture, which run, the one longitudinally through the centre of the body, the other transversely, also through the centre of it; and they cut one another at right angles, were there not a lozenge-shaped plate inserted at the point where they would otherwise meet. There are thus five plates at the lower or belly part of the animal. They are all thickly tuberculated outside with wart-like prominences; the inner present appearances indicative of a bony structure. The plates on the upper side are more numerous and more difficult to describe, just as it would be difficult to describe the forms of the various stones which compose the ribbed and pointed roof of a Gothic cathedral, the arched ridge or hump of the back requiring, in a somewhat similar way, a peculiar form and arrangement of plates. The apex of the ridge is covered by a strong hexagonal plate, fitted upon it like a cap or helmet, and which nearly corresponds in place to the flat central part of the under side. There runs around it a border of variously-formed plates, that diminish in size and increase in number towards the head, and which are separated, like the pieces of a dissected map, by deep sutures. They all present the tuberculated surface. The eyes are placed in front, on a prominence much lower than the roof-like ridge of the back; the mouth seems to have opened, as in many fishes, in the edge of the creature's snout, where a line running along the back would bisect a line running along the belly; but this part is less perfectly shown by my specimens than any other. The two arms or paddles are placed so far forward as to give the body a disproportionate and decapitated appearance. From the shoulder to the elbow, if I may employ the terms, there is a swelling muscular appearance, as in the human arm; the part below is flattened so as to resemble the blade of an oar, and it terminates in a strong sharp point. The tail — the one leg on which, as exhibited in one of my specimens, the creature seems to stand — is of considerable length, more than equal to a third of the entire figure, and of an angular form, the base representing the part attached to the body, and the apex its terminations. It was covered with small tuberculated rhomboidal plates, like scales; and where the internal structure is shown, there are appearances of a vertebrated bone, with rib-like processes standing out at a sharp angle." The species has been named by Agassiz, *P. Millèri* in honour of the author of "The Old Red Sandstone" and the "Asterolepis."

PTEROCERAS. A genus of Mollusca animals, inhabiting the Indian Ocean. The head is furnished with a proboscis and two tentacula, which are short; the eyes are situated on foot-stalks longer than the ten-

tacula: foot small. The shell is oblong; spire small; mouth terminated by a rather long canal: right lip dilated into several claws, and having a sinus near the canal;

DEVIL'S CLAW.—(PTEROCERAS SCORPIO.)

operculum horny. The appearance these shells present at various periods is strikingly different. When the animal is young the shell has no claws; but they gradually make their appearance, at first in the form of short and open canals, which by degrees assume the length and curve of the adult and completed shell, and ultimately are closed up with shelly matter and become solidified. The number of claws varies in different species; in some they are straight and smooth; in others they are numerous, but small; whilst many have these appendages very much curved. Some of them exhibit the most beautiful colours on their internal surface. Our cut represents *Pteroceras scorpio*: the DEVIL'S CLAW.

PTERODACTYLUS. The name given to a genus of extinct Reptiles, which are supposed from their structure to have occupied that share in the economy of nature which is at present assigned to the Bats and Insectivorous Birds. From the size and form of the posterior extremities, the Pterodactylus seems to have been able to walk and perch upon them, after the manner of birds; and by using both its anterior and posterior limbs, it could probably walk and climb on rocks and cliffs, like Bats and Lizards. They have been found in the lias and oolite formations, greatly varying in size, and generally mingled with the remains of Dragon-flies, Beetles, and other insects.

It appears that the opinions of philosophers with regard to the true nature of this extinct animal were various and contradictory, until the reasonings of the great French Naturalist solved this zoological puzzle. "Behold," says Cuvier, "after having built, as it were, the animal before our eyes, an animal which, in its osteology, from its teeth to the end of its claws, offers all the characters of the Saurians; nor can we doubt that those characters existed in its integuments and soft parts—in its scales, its circulation, its general organs. But it was at the same time an animal provided with the means of flight,—which, when stationary, could not have made much use of its anterior extremities, even if it did not keep them always folded, as birds keep their wings,—which *nevertheless might use its small anterior fingers to suspend itself from the branches of trees, but when at rest must* have been ordinarily on its hind feet, like the birds again; and, also like them, must have carried its neck sub-erect and curved backwards, so that its enormous head should not interrupt its equilibrium." Dr. Buckland, whose attention has been especially directed to the examination of extinct animals, dwells at considerable length on the presumed habits and character of the Pterodactylus; and exclaims, "Thus, like Milton's fiend, all-qualified for all services and all elements, the creature was a fit companion for the kindred reptiles that swarmed in the seas or crawled on the shores of a turbulent planet. With flocks of such-like creatures flying in the air, and shoals of no less monstrous Ichthyosauri and Plesiosauri swarming in the ocean, and gigantic crocodiles and tortoises crawling on the shores of the primeval lakes and rivers, air, sea, and land must have been strangely tenanted in these early periods of our infant world."

PTEROGLOSSUS. [See ARACARI.]

PTEROMYS, or FLYING SQUIRREL. [See SQUIRREL.]

PTERONARCYS. A genus of Neuropters first described by Mr. Newman. It is allied to PERLA; the finest species, *Pteronarcys regalis*, is a native of Canada and other more northern parts of North America. Mr. Barnston, a gentleman belonging to the Hudson's Bay Company's service, and who has paid much attention to Natural History, especially to that part of it which regards insects, mentions in his notes that the species of this genus shun light, concealing themselves during the day under stones in damp places, and appear on the wing at nightfall, when the air is charged with moisture. But the most remarkable fact connected with this insect is the discovery by Mr. Newport, of persistent branchiæ in the perfect state; in the larva, and, it is believed, in the pupa state, the insect lives constantly in the water; and in ordinary states of the atmosphere, such branchiæ would be no longer necessary, but in this case their continuance would seem a peculiar provision of Nature suited to the damp atmosphere in which it lives,—Mr. Newport observing, that "the function of branchiæ, or aquatic organs, is equally well performed in the open air as in water, so long as the air is charged with a sufficiency of fluid to preserve these organs in a healthy state." We eagerly look for an elaborate memoir on this anomalous occurrence from the pen of our most talented comparative anatomist in the field of articulated animals.

PTEROPODA. The name of a class of Molluscous animals, particularly distinguished by the possession of a pair of fin-like organs, or wings, consisting of a natatory expansion of the mantle on each side of the neck, by the aid of which they are rapidly propelled through the water. Some of them have a shelly covering; others are unprovided with such a protection; but wherever it exists, it seldom covers more than the posterior half of the body, and is extremely light and delicate. The head of these ani-

mals is generally prominent, possessing eyes and sensory tentacula; and their internal organization is of a very complex nature. These animals abound in the seas of warm climates; to which, however, the species are not restricted; for some of them, as *Clio borealis*, are so numerous in the Arctic Seas, as at certain seasons to furnish whales with their ordinary food. Mr. Arthur Adams calls these little active and energetic mollusca "the very butterflies of the deep;" "insatiate and greedy, they are ever on the move, spinning, diving, and whirling in every direction." They are stated to be all hermaphrodites.

PTEROPTOCHOS. [See Barking Bird and Cheucan.]

PTEROPUS: PTEROPIDÆ. A genus and family of Mammalia, belonging to the *Cheiroptera*, and distinguished as Frugiverous Bats. The species are very numerous; they produce early; and the sexes are separately gregarious. They are found in the south of Asia, the Indian Archipelago, Japan, Madagascar, and Australia. The Kalong, or Fox Bat. (*Pteropus Javanicus.*) This species, which is a native of Java, measures in the spread of the wings about five feet. They congregate in companies, and, selecting a large tree for their resort, suspend themselves by the claws of their hind limbs to the naked branches, affording to the stranger a very singular spectacle: in short, to a person unaccustomed to their habits, they might be readily mistaken for fruit of a large size suspended from the branches. They thus pass the greater portion of the day in sleep; but soon after sunset they gradually quit their hold, and pursue their nocturnal flight in quest of food. They direct their course, says Dr. Horsfield, by an unerring instinct, to the forests, villages, and plantations, occasioning incalculable mischief, attacking and devouring indiscriminately every kind of fruit, from the abundant and useful cocoa-nut, which surrounds the dwelling of the meanest peasantry, to the rare and most delicate productions which are cultivated with care by princes and chiefs of distinction. The flight of the Kalong is slow and steady, pursued in a straight line, and capable of long continuance.

PTILINOPUS. A genus of beautiful birds belonging to the *Columbidæ* family, some species of which are natives of Australia, and others distributed over the Indian and Polynesian islands. The one we are about to describe has been named by Mr. Gould, in compliment to Mr. Swainson, the celebrated naturalist.

Ptilinopus Swainsonii, or Swainson's Fruit-Pigeon. This bird has by many authors been considered as identical with or as a mere variety of the *Columba purpurata*; but Mr. Gould was convinced, by comparing them, that they possessed characters sufficiently different to constitute a distinct genus. The forehead and crown deep crimson-red, surrounded except in front with a ring of light yellow; back of the neck grayish green; all the upper surface bright green tinged with yellow, the green becoming deep blue towards the extremities of the tertiaries, which are broadly margined with yellow; tail-feathers deep green, tipped with rich yellow; throat greenish gray; breast green, each feather forked at the end, and with a triangular silvery-gray spot at each point; flanks and abdomen green, with a large patch of orange-red in the centre of the latter; under tail-coverts orange-yellow; thighs green; bill greenish black; feet olive brown. The sexes are so nearly alike as to render them scarcely distinguishable.

PTILOCERCUS. A genus of mammalia allied to *Tupaia*, and remarkable for its tail being fringed on each side, at the end, like a quill. This remarkable genus was described in February, 1848, by Mr. Gray, in a paper read at the Zoological Society. The only species, Ptilocercus Lowii, was brought by Mr. Low from Borneo. As that gentleman has lately returned to Borneo, we may expect from him shortly, an account of the habits of this very curious animal.

PTILOGONYS. A genus of Passerine birds, the best known species of which is Ptilogonys Armillatus, found in Hayti, Jamaica, &c., and there called the Solitaire; remarkable for its singularly clear, slow, and melodious notes. It is eight inches in length, and its wings expanded rather less than a foot: the upper part of the plumage is blue-gray; wing-quills black with gray edges, the bases of the interior primaries white; breast ashy-gray, paler beneath; tail black; vent and under tail-coverts rusty orange; bill black; feet bright fulvous, claws black. The following description, which is taken from Mr. Gosse's charming work, conveys a lively idea of this sweet vocalist. "As soon as the first indications of day-light are perceived, even while the mists hang over the forests, these minstrels are heard pouring forth their wild notes in a concert of many voices, sweet and heightened like those of the harmonica or musical glasses. It is the sweetest, the most solemn, and most unearthly of all the woodland singing I have ever heard. The lofty locality, the cloud-capt heights, to which alone the eagle soars in other countries, — so different from ordinary singing-birds in gardens and cultivated fields, — combine with the solemnity of the music to excite something like devotional associations. The notes are uttered slowly and distinctly, with a strangely-measured exactness. Though it is seldom that the bird is seen, it can scarcely be said to be solitary, since it rarely sings alone, but in harmony or concert with some half-dozen others chanting in the same glen. Occasionally it strikes out into such an inventitious combination of notes, as to form a perfect tune. The time of succeeding a single note, is that of the semi-breve. The quaver is executed with the most perfect trill. It regards the major and minor cadences, and observes the harmony of counterpoint, with all the correctness of a perfect musician. Its melodies, from the rough

ctness of each note; are more n songs. Though the concert of l keep to the same melody for an little coterie of birds chants a ng, and the traveller by no acci- hears the same tune. * * *. Its eing blue passing into violet, it obtained the name of Bishop. It -throated, so flexible in its tones, in its warblings, that those who it become somewhat measured in s of the Nightingale. The notes are lengthened out like those of Whilst it sings it does not seem reath; but it rests a double time ecommences, and this alternation and resting will be continued for ." The foregoing account Mr. ed from his ornithological friend and after he had proved their rectness by auricular observation, the very probable conjecture, *true melodies* are peculiar to the son, and indicate that the period ion is either begun or near." In ens which he dissected he found they were evidently baccivorous, chs being full of the green berries nto.

ORHYNCHUS. [See SATIN- D.

IS PARADISEUS. [See RIFLE

IS. A genus of birds found in Among the species particularised id, we may allude to the PTILO- rus, a bird of Western Austra- found among gum trees, searching , pollen, and saccharine juices. ud, ringing, and not unpleasing stantly poured forth. Its nest, eat, small, open, and cup-shaped, ly suspended from a horizontal nch; and is composed of fine bres and grasses matted together, s' webs, and sometimes wool.

PLUMULUS. This bird, which inhabitant of Western Australia, shed by its note—loud and shrill, ortsman's pea-whistle, continued termission for a great length of

Æ. A family of Coleopterous in- rising a rather extensive group, ugh small in size, are of very de- abits. The body is of an oval or e form, generally short and ob- ch end; head small; antennæ filiform or serrated; mandibles lpi short; tarsi five-jointed, and y very broad. When touched, erfeit death by withdrawing their antennæ, and contracting their e species are found in old houses, ugs, stumps of decayed trees, &c., r larvæ perforate in every direc- rs feed upon collections of dried ns of insects, &c.; whilst others household furniture, books, &c.; ce are some which will devour almost any substance they come in contact with, whether it be ship-biscuit or Cayenne pepper, old woollen clothes or rhubarb, the wheat deposited in our granaries, or the timbers with which they are constructed. That *alarming* insect, *Anobium tesselatum*, or the Death-watch, is the largest British species belonging to the family; and to it we refer our readers for further particulars.

PTINUS. A genus of Coleoptera belonging to the family *Ptinidæ*. The body of these insects is of rather solid consistence, sometimes ovoid or oval, and sometimes cylindrical, but generally short, and rounded at each end: the head is almost orbicular, and received in the thorax, which is swollen, or hood-shaped; the antennæ of some are filiform, or become gradually slender to the

PTINUS FUR.

tip, while others terminate in three joints, abruptly thicker and longer than the preceding joints; the mandibles are short, thick, and toothed. All these insects are of small size; and their colours are always obscure, and but slightly variegated. *Ptinus fur*, the species here figured, has the antennæ inserted below the eyes, and the body is oblong. They frequent houses, and especially granaries. Their larvæ devour dried plants, and the prepared dry skins of animals. The antennæ of the males are longer than those of the females, and in many species the latter are wingless.

PUFFIN. (*Fratercula Arctica.*) The Puffin belongs to the sub-genus *Fratercula*; and is about twelve inches long. It has a very large singular looking bill, which has the appearance of a sheath slipped over both mandibles; it is curved towards the point, compressed vertically, and transversely furrowed on the sides: the chin and cheeks are white, bordered with gray, the latter much puffed up with feathers, which make the head look large and round. The crown of the head and upper part of the plumage are black, and a collar of the same colour encircles the neck: the under parts are white and the legs are orange. The Puffin can fly with great rapidity when once upon the wing. In tempestuous weather it takes shelter in the holes of caverns and rocks, or in those made by the rabbit on the beach, where it sits dozing, in snug security, till the return of calm weather; for they are unable to brave the storm. They live chiefly upon small crustaceans, sea-weed, &c., as it is said; but it is evident, from the structure

COMMON PUFFIN.—(FRATERCULA ARCTICA.)

which they easily dislodge. Puffins are met with on almost all the rocky cliffs on the coasts of Great Britain and Ireland, and on many of the surrounding islands, in immense numbers. They are gregarious and migratory. They hatch their young early in July; from which time till about the middle of August they are employed in nurturing and rearing their brood; which being done, the whole company leaves the breeding-place, and pursues its route to other regions, more suited to their future exigencies.

PUFFINUS. A genus of web-footed birds allied to the Petrels. The nostrils have separate openings, and the end of the lower mandible is bent downwards.

Our British species, which is called the MANKS PETREL, and sometimes the SHEARWATER or SCRAPE (*Puffinus anglorum*), has the wings longer than the tail; it is of a black colour above, and is white beneath, the sides of the neck being freckled with black and white. It arrives at its breeding places in March, and generally leaves in August. They breed on the Isle of Man in rabbit-holes, in the Scilly Islands, and in different parts of Scotland. The young are fat, and sought after by the inhabitants, who salt them and eat them with potatoes and cabbage: the feathers also are collected. Another closely allied and widely distributed species is

The SOOTY PETREL (*Puffinus major*) is

instead of a Petre
Capt. Sir James
&c. to the Antarc
when in lat. 47°
were accompanied
of the great Alba
Petrel, and still
speckled Cape Pig
Stormy Petrel, of t
These birds added
to our solitary wa
strongly with the
ness of the tropica
bird is to be seen,
of its few scattered
remarkable where
tifully with creatu
THALASSIDROMA.]

PUG [MOTHS
collectors to vario
genus *Eupithecia*.

PULEX. [See

PULMOGRAD

PULMONARIA
of the *Arachnida*,
foot-like palpi, ne
and the *Podipalp*
allies, having very
nate in placers.

PULMONEA;
name of an order
comprehending th
which the blood is
through a vascula
internal surface
Although the gre
of this order live o
but these are obli
to the surface to
upon vegetables,
exclusively; but
cious. Those wi
known as Slugs, m
cian. Those whi
Snails and their al

the tail of a dusky ferruginous tinge, h a black tip. When at a mature age, ever, its general colour is a silvery ge. The Puma was formerly found in t parts of the American continent, and till numerous in South America; but

PUMA.—(FELIS CONCOLOR.)

advance of population in the north has used it scarce. It is a savage and de- tive animal, possessing all the watchful ism of the cat kind; and although it ually confines its attacks to the smaller rupeds, it will sometimes attack those rge size and strength. When domesti- d, (as it is occasionally,) its manners ly resemble those of the common cat, ing its fondness at being caressed by same kind of gentle purring. It can b trees with great facility, and will h the opportunity of springing on such als as happen to pass beneath. In the times, however, it is seldom seen, the t being the time it selects for commit- its depredations. It is asserted that Puma always kills its prey by springing loc shoulders, and then drawing back ead with one of its paws, until the ver- e breaks.

NDIR. The local name in Oxford- and the adjacent counties for an oolite l belonging to the genus *Terebratula*.

PA. A genus of Molluscs, which de- their name from the resemblance of the

PUPA UVA.

in shape to the pupa or chrysalis of an t. The shell is cylindrical; spire long. mal like the Helix.

RPLE EMPEROR (BUTTERFLY). me given by insect collectors to Butter- of the species *Apatura Iris*.

RPLE GRACKLE. [See QUISCALUS.]

RPURA. A genus of Mollusca, found abundantly in the seas of warm cli- , where the shells attain a very large They are thick and oval, either smooth ferruginated; spire short. *A few species* met with in *Europe, chiefly found on or the sea shores. It was from the Pur- mentalis, as is supposed, that the Roman* purple dye was obtained. There are very many recent species, and a few fossil.

PUSS MOTH. [See CERURA VINULA.]

PYCNOGONUM. A genus of Crustacea belonging to the group *Podosomata*, and forming as it were a connecting link with the *Arachnida* or Spiders, with which some naturalists used to class them. There are several genera belonging to the same group, all of which are marine. These animals conceal themselves among sea-weeds and corallines, and under stones; and they are not unfrequently dredged in deep water. Their motions are very slow, so that their prey must be either dead animal matter or

PYCNOGONUM LITTORALE.

living animals as sluggish as themselves. They are said to live chiefly on the animals of bivalve shells, and on minute insects and worms. The species here figured, *P. littorale*, is not uncommon on our coasts; by Linnæus it was believed to be parasitic on whales. The female, Dr. Johnston informs us, carries her innumerable ova, enveloped in a broad square gelatinous membrane or apron, under the body between the legs, where they are attached in front to a pair of filiform jointed organs. M. Kroyer has lately published interesting descriptions and figures of the metamorphoses of this and the allied genera. They would seem to be softer and larger-bodied proportionally than in the perfect state, in which it is represented in the above figure.

PYRALIDÆ. A family of Lepidopterous insects, moderate in extent, belonging to the general section HETEROCERA. The species are of a small size, having a slender and elongated body; the antennæ are simple, or but slightly ciliated in the males; the labrum and mandibles small; the labial palpi often greatly elongated and porrected, but occasionally recurved; the head is sometimes furnished with a pair of ocelli; and the thorax never crested. The wings are of moderate size, and generally placed in a triangular form during repose, the anterior ones being slightly angulated at the tip: the legs are ordinarily very long, especially the fore pair, the coxæ of which are nearly as long as the tibiæ, thereby indicating the great activity of movement so frequently exhibited by these insects. Owing to the *fore legs* of some of the species being ornamented with fascicles of hairs capable of expansion, they have received the name of "fan-footed" moths. The caterpillars are, in general, long and slightly hairy. For

the most part they have only three, but sometimes four pairs of ventral feet.

The genus *Hypena* and its allies are the largest in the family; the species are found in hedges, and amongst low herbage; the larvæ are well distinguished by having only three pairs of ventral feet; and the chrysalis is enclosed in a slight cocoon in a leaf rolled up by the larva. The species of *Pyrausta* (*P. purpuralis*) are gaily coloured insects, which frequent hedges, and revel in the sunshine, hovering over grassy spots, but immediately settling as soon as the sun is overclouded; whilst those of *Hydrocampa* and its allies frequent aquatic plants, upon which the larvæ feed.

PYRALIS. A genus of Pyralidous Moths, one species only of which deserves notice, as its caterpillar sometimes greatly injures several different sorts of vegetables. This is the CABBAGE-GARDEN PEBBLE MOTH (*Pyralis forficalis*). The head, back, and upper wings of the Moth are hazel brown, and brownish gold; the antennæ light brown; the abdomen and under wings whitish. On the upper wings are two distinct and two faint deep rusty brown stripes. The under wings have a brownish-yellow curved line, towards the outer edge. Breadth, one inch. The first brood flies in May, and the second in August. The caterpillar is found in May and June, and the second generation in September and October. It has a light brown head, and a yellowish green body, with blackish stripes running lengthwise, and blackish dots, having fine white lines between, and white incisions and spiracles. Its length is about eight lines. When these caterpillars are numerous, they do important damage to the cabbage tribe and horse-radish. There is scarcely any other means of destroying them, than that of shaking them off, and burying them immediately.

PYRAMIDELLA. A genus of Mollusca, with pretty little spiral shells, found in the Indian and American seas; and of which there are both recent and fossil species. The shell is pyramidal, smooth, and polished; spire long, pointed, and composed of numerous whorls; outer lip somewhat expanded; columella tortuous, with several folds.

PYROCHROIDÆ. A family of small Coleopterous insects, found in the spring and early part of the summer. The front part of the body is narrow and flat, with the neck distinct, and the thorax sub-orbicular: they are generally gaily coloured and active in their flight; they frequent leaves and flowers, but the larvæ are found under the bark of trees and in rotten wood. The only British genus is *Pyrochroa*, distinguished by its pure red colour.

PYROMELANA. A genus of Grosbeaks, distinguished by the fine red and black colour of the plumage. [See GROSBEAK.]

PYROSOMA. The name given to certain compound Ascidians, remarkable for their brilliant phosphoric luminosity: they are marine.

PYRULA. A common and numerous genus of Mollusca, chiefly found in the Indian Ocean and Red Sea. The shell is large and pear or fig-shaped; the spire short, and sometimes flattened; aperture wide, terminating in a long, open canal; outer lip thin; columella smooth; operculum horny. In the

PYRULA FIGUS.

British Museum is a specimen of a *Pyrula bezoar* that appears to have grown with perfect regularity until the formation of its last half whorl, which is thrown considerably more than half an inch out of its proper position by a group of barnacles. These shells had probably attached themselves to the back of the *Pyrula* at an earlier stage, and as the latter had increased in size at length filled the place that should have been occupied by the inner lip, which, on meeting with this interruption, diverged from its course, and was thrown over the barnacles. Had the shell not been taken until a later period, there can be little doubt that the animal would have at length destroyed the barnacles, and completely hidden them from view, although it would appear that it had not the power to remove them by absorption while they retained their vitality.

PYTHON. A name given to the great constricting serpents of the Old World. The size to which the Pythons grow is fully equal to that attained by the *Boa*, if it does not exceed it: some have been seen upwards of thirty feet long; and their strength is proportionate to their gigantic size. Indeed, a good idea of these reptiles may be gathered from the article BOA [which see]. At the same time it may not be amiss to give the reader an example of the Python's nature, as related by Mr. A. Adams, of H.M.S. Samarang, while in the Philippine Archipelago (March, 1844): "While lying in the truly delightful bay at this place [Manilla], a trifling incident occurred, showing the extreme vivacity, and rapidity of movement, in the larger serpents, even in those of the Boa tribe, especially when first captured. They are, indeed, then very different from those apathetic listless monsters one are coiled up in blankets, at Zoological Gardens and in menageries. Sir Edward Belcher had a very beautiful specimen of the *Python Schneideri* presented to him, about twelve feet long, and having one day given it a chicken, the reptile, as usual, compressed it nearly to death, within the muscular folds of its body, when one of the lapidaries

er-hearted than the rest, begged the fowl. I had no sooner, how- duced my arm with that benevo- ion, than throwing back its head, ding its body from its prey, 'the y snake,' as Milton would have darted at my hand with the great- y, and held me fast with its teeth, of the thumb, nor was it without ble that I was able to extricate ing to the fact that the long, ved teeth of a serpent all point . Some time after this event the rant of the poor reptile was sealed, inted myself his executioner."

UMANA. The name of an order alia, characterized by the four g each terminated by a *hand;* as Baboon, &c. The term *Quad-* r *four-handed*, does not, how- ctly apply to *all* the animals thus ; the thumb on the hands, or nities, being wholly or in part the monkeys of the Western He- There are very marked dif- nong the tribes of this order, as to in which they approach Man in ral conformation; some of them strong resemblance to him in aspect, and gait; whilst others ttle removed from the ordinary . In their food and habits of here is great variety. Some live r in pairs; but the larger pro- gregate together: some dwell on l or inhabit rocky heights, while altogether arboreal, and spend among the branchy foliage of the e three families or tribes which includes are thus distinguished: , *Monkeys of the Old World;* 2. *Monkeys of the New World;* and 3. , *the Lemur tribe.* But the reader l to the words, APE, ORANG- BABOON, MONKEY, &c., for further n applicable to the particular

UPEDS. In this familiar term ended a large and most important restrial animals; whose essential are—that their bodies are co- hair; that they have four feet; emales are viviparous, or bring r young alive; and that they n.

h the word Quadruped is not used, zoological sense, as indicative of a group of animals, yet a few ob- under this head, though trite, e not wholly uncalled for. Widely rom each other as many of the , no one can fail to notice how adapted they all are by Nature respective stations. Some have ed to support a vast unwieldy d possess neither flexibility nor The Elephant and the Rhinoceros resembling pillars: they are not *pursue other animals for their and, conscious of their own su- ngth, there are none which they oid. Deer, Hares,* and other animals whose safety depends on flight, have slender legs, and are so formed as to escape from their pursuers by superior swiftness. Beasts of prey have their feet armed with sharp and powerful claws; while, on the contrary, animals of peaceful habits generally have hoofs. It is also ordained that those animals which are large and formidable produce but few at a time, while such as are small are extremely prolific: were it otherwise, many of the former would perish for want of food, and life would be indulged without the necessary means of subsistence. Besides, did the Elephant or the Rhinoceros, the Tiger or the Lion, possess the same degree of fecundity with the Rabbit, all the arts of Man would be unequal to the contest; and he who now styles himself "lord of the creation," would soon become its most abject slave.

QUAGGA. (*Asinus Quagga.*) This animal is an inhabitant of the southern parts of Africa, and bears a great resemblance to the Zebra. It is less, however, than the Zebra, with the hinder parts higher, and the ears shorter. The head, neck, mane, and shoulders are blackish brown, banded with white; the ground colour gradually becoming paler, and the bands less distinct and diffused, as we proceed along the back towards the rump, which is grayish; the hind parts being rather spotted than striped. The dorsal line is black, margined on each side with a white

QUAGGA.—(ASINUS QUAGGA.)

line: belly, tail, and legs whitish; ears with two irregular black bands and white tip. The Quagga is a social animal, living in large troops, is much more tractable than the Zebra, and is said to be occasionally used at the Cape of Good Hope for domestic purposes. Notwithstanding this mildness of character when domesticated, it is exceedingly fearless in its native plains, and is even said to be more than a match for the Hyæna, fighting desperately both with its hoofs and teeth. Though it inhabits the same parts of Africa, it never associates with the Zebra. The Quagga has received a variety of names from authors; thus Pennant terms it the *Quacha*, Masson the *Opeagha*, and Sparrman the *Quagga*; a name, Mr. Gray observes, derived from its voice, which resembles the barking of a dog.

QUAIL. (*Coturnix vulgaris.*) This bird greatly resembles the Partridge, but is

smaller, has a more delicate beak, and no spur on the legs. It is about seven inches and a half in length. Bill dusky, eyes hazel: the feathers of the head, neck, and back are a mixture of brown, ash, and black; the hinder part of the neck and crown of the head are divided by a long pale yellow line; the chin and throat are white, bounded by a black crescent, which is deepest in front; the breast is of a yellowish-red, spotted with black; the scapular feathers are marked by a light yellowish streak down the middle of each; quills lightish brown, with small rust-coloured bands on the exterior edges of the feathers; the breast is pale rusty, spotted with black, and streaked with pale yellow; the tail barred like the wings; belly and thighs yellowish white; legs pale brown. The female's plumage is less vivid, and the wing-coverts are barred with yellowish white. She lays from eight to a dozen eggs, of a yellowish colour, with dusky spots and blotches.

Quails are very generally diffused throughout Asia, Africa, and the southern parts of Europe, but are more rare in northern and temperate climates. In the British islands they are never abundant. They are migratory, and are seen in immense flocks flying across the Mediterranean, from Europe to the shores of Africa, in the autumn, and returning again in the spring, frequently alighting in their passage on the intervening islands. Such prodigious numbers have appeared on the western coasts of the kingdom of Naples, that a hundred thousand have been taken in a day within the space of four or five miles. From these circumstances (observes Bewick) it appears highly probable that the Quails which supplied the Israelites with food, during their journey through the wilderness, were driven thither on their passage to the north, by a wind from the south-west, sweeping over Ethiopia and Egypt towards the shores of the Red Sea. Quails are said to be very indolent birds; they usually sleep through great part of the day, concealed among the high grass, lying on their sides, with their legs extended, and should a dog approach, he must absolutely run in upon them before they are flushed. The males are birds of great courage, and their quarrels frequently terminate in mutual destruction. Quail-fighting was practised by the Greeks and Romans; and we are informed that Agustus punished a prefect of Egypt with death, for bringing to his table one of these birds which had acquired celebrity by its victories! The Chinese are much addicted to the *sport;* and it is said to be also a common practice in some parts of Italy.

The Chinese Quail (*Coturnix excalfactoria*) is an elegant little species, measuring only four inches in length. The male has a triangular deep black spot on the throat: from the base of the beak extends a white whisker, surrounded by black; below which is a pure white gorget, bordered with black; the forehead, breast, and sides are of a lead colour, the latter marked with black bands: the middle of the belly, the thighs, and the abdomen are red chestnut; the upper part of the body and the tail-coverts are a purplish-brown, varied with black spots; and most of the feathers have whitish shafts: the wings are grey-brown, the greater coverts lead colour, and the whole tipped and fringed with chestnut: the beak is black; the feet and the claws are yellow. In the female, the cheeks, the forehead, and a stripe above the eyes, are of a bright red; the throat pure white; the feathers of the head are dusky, tipped with gray; and a narrow longitudinal band extends over the middle of the crown from the forehead. The plumage of the back and rump is red, with black spots, and longitudinal reddish-white dashes: the scapulars and wing-coverts are gray-brown, marked with delicate black undulated lines, and many black spots on their inner webs: the breast, sides, thighs, and abdomen, are bright gray, striped transversely with black; the wings gray-brown: the beak brown; and the legs yellow. This bird is abundant in the Manilla and Philippine Islands, and in China it is amazingly numerous. There they are kept in cages for the singular purpose of exercising the hands of their owners in winter: they also rear them for the purpose of fighting.

Several other species, in appearance and habits not greatly differing from the common Quail, are known; as the New Holland Quail (*Coturnix Australis*); the White-throated Quail (*Coturnix torquata*), &c.

QUERQUEDULA, or TEAL. A genus of web-footed birds, containing the Common Teal (*Querquedula crecca*), the Garganey (*Q. circia*), and other species. [See Duck: Teal.]

QUISCALUS. A genus of birds allied to the Starlings, and indigenous to America. Of these we may particularly describe the Quiscalus Versicolor, or Purple Grackle. We are told by Wilson that this "noted depredator" is well known to every careful farmer of the northern and middle states. About the 20th of March he says) the Purple Grackles visit Pennsylvania from the south, fly in loose flocks, frequent swamps and meadows and follow in the furrows after the plough; their food at this season consisting of worms, grubs, and

Purple Grackle.
(Quiscalus versicolor.)

pillars, of which they destroy prodigious numbers, as if to recompense the husbandman beforehand for the harm they intend to make among his crops of Indian corn. Towards evening they repair to the several rookeries, or roosting-places, which they continued, sometimes, as long as they remain, in the tallest of those trees that, growing single

ts in company, about the beginning
of April; sometimes ten or fifteen
ng on the same tree. One of these
ken from a high pine tree, is now
e. It measures full five inches in
within, and four in depth; is com-
rwardly of mud, mixed with long
d roots of a knotty kind of grass, and
h fine bent and horse hair. The
ive, of a bluish olive colour, marked
ge spots and straggling streaks of
d dark brown, also with others of a
ege. They rarely produce more
brood in a season. The trees where
fa build are often at no great dis-
m the farm-house, and overlook
tatkens. From thence they issue
rections, and with as much confi-
make their depredations among the
ing fields, as if the whole were in-
or their use alone. Their chief
, however, is directed to the Indian
ill its progressive stages. As soon
first blade of this grain begins to
e appearance above ground, the
hail the welcome signal with
f peculiar satisfaction, and, without
for a formal invitation from the
r, descend on the fields and begin to
ind regale themselves on the seed,
g the green blades around. While
rily employed, the vengeance of the
etimes overtakes them; but these
are soon forgotten, and those

—who live to get away,
Return to steal another day.

the beginning of August, when the
ers are in their milky state, they
ked with redoubled eagerness by
oles and Redwings, in formidable
ined bodies. They descend like a
ge, sweeping tempest on the corn,
he external covering of twelve or
ents of leaves, as dexterously as if
the hand of man, and, having laid
ear, leave little behind to the farmer
ths, and shrivelled chins, that con-
heir favourite fare." About the
f November, it appears, they move
ds the south, their winter residences
rth and South Carolina, Georgia,
fers numerous bodies, collecting
from all quarters of the interior
ern districts, and darkening the
their numbers, sometimes from one
ded multitude of many hundred
s. A few miles from the banks of
ake, on the 20th of January, I met
e of those prodigious armies of
. They rose from the surrounding
h a noise like thunder, and, descend-
e length of road before me, covered
he fences completely with black.
they again rose, and, after a few
s, descended on the skirts of the
ered woods, at that time destitute
they produced a most singular and
effect; the whole trees for a con-
extent, from *the top to the lowest*
moving as if hung in mourning;
e and screaming the meanwhile
the distant sound of a great
cataract, but in more musical cadence, swelling and dying away on the ear, according to the fluctuation of the breeze. In Kentucky, and all along the Mississippi, from its juncture with the Ohio to the Balize, I found numbers of these Birds, so that the Purple Grackle may be considered as a very general inhabitant of the territory of the United States." That they are great destroyers of corn, there can be no doubt; but it most not be forgotten that they are also particularly destructive to almost all the noxious worms, grubs, and caterpillars, that infest the fields, which, were they allowed to multiply unmolested, would soon consume nine-tenths of all the production of the cultivator's labour, and desolate the country with the miseries of famine. The Purple Grackle is twelve inches long and eighteen in extent; on a slight view seems wholly black, but placed near, in a good light, the whole head, neck and breast, appear of a rich glossy steel blue, dark violet, and silky green; the wings and other parts of the plumage reflecting these and various other glosses in a greater or less degree.

RABBIT. (*Lepus cuniculus.*) This animal belongs to the *Leporidæ*, or Hare tribe, and is a native of most of the temperate and warmer parts of the old continent, but is not found very far north: neither was it originally a native of Britain, but is said to have been introduced from Spain. In structure the Rabbit very much resembles the Hare, but may be readily distinguished from it by its smaller size, its shorter ears and hind legs, and the absence of the black tip to the ears. In its habits it is extremely different from that animal; being unable to outstrip its enemies in the chase, it seeks its safety and

RABBIT.—(LEPUS CUNICULUS.)

finds shelter by burrowing in the ground; and, instead of leading a solitary life, its manners are eminently social. The fecundity of Rabbits is truly astonishing: they will breed seven times in one year, and perhaps bring forth eight each time; and, on a supposition that this happens regularly for four years, a single pair would in that time multiply to 1,274,840. We should, however, add that although this is *possible*, such extraordinary fertility is not very probable. When the time of parturition draws near, the female forms a separate burrow, more intricate than the ordinary one, and lines it at the bottom with a part of her own fur: the young are born blind, and very scantily covered with hair; and for nearly six weeks she continues to suckle them. During this period the female is seldom visited by the male; but as soon as the little progeny are capable of coming abroad,

hinder legs. They make extensive inroads, however, upon corn-fields and plantations, in which they do considerable mischief by devouring the newly-sprung corn, and barking the young trees. They generally retire within their burrows during the day, coming abroad about twilight to feed. . . . . The rapid multiplication of the Rabbit would soon render it one of the greatest scourges of our agriculture, were it not, on the one hand, destroyed by numerous birds and beasts of prey, and on the other, sought by man as an article of food, and on account of its fur, which is used for various purposes. The supply for this latter object would, however, be wholly unequal to the demand, were our furriers dependent upon the produce of our country only. Hundreds of thousands of Rabbit-skins are annually imported here from Germany, and other parts of the northern and middle districts of Europe, where myriads of Rabbits are bred for this purpose."

In its wild state the colour of the Rabbit's fur is grayish brown, paler or whitish on the under parts; its tail black above, and white beneath; but when domesticated, as every one knows, it varies greatly in colour; being gray, reddish-brown, or black, more or less mixed with white; and often perfectly white. In England, Rabbits are reared either in warrens or in hutches: the best situations for the former are sandy hills, on which the juniper is thickly planted, as the leaves of this shrub are eagerly eaten by these animals, and impart a delicate and aromatic flavour to the flesh. The cleanliness of hutches should be particularly attended to; otherwise their inhabitants will be sickly, and Rabbit-breeding turn out a losing speculation. The ingenuity of Rabbit-fanciers has been shown in the production of various breeds, chiefly remarkable for the excessive length of their ears; and we occasionally see them exhibited of such an enormous size and fatness, as to be well entitled to the appellation of "prize cattle." The Half-lop, the Oar-lop, the

is savage and sanguina
slaughter among both w
birds, as it always dest
without consuming any
the head, or the bloo
their wounds; in this
the Polecat. It will al
mit ravages in plantati
of Indian corn, especial
young: it also feeds
fruit, and is said to de
eggs, on which account
of being destructive to
mal is a good climber,
claws enables it to ad
branch of a tree, that
exertion of strength
chiefly feeds by night,
during the day, excep
it has a kind of oblig
can leap and climb wi
very frequently seen o
mesticated state it is e
inquisitive, examining
on bread, milk, fish, c
larly fond of sweets of
as great a dislike to ac
ever, produces consider
habits of the Racoon;
state of nature, of sleep
and roaming about al
food, it will learn to
day, and to remain quie
it commonly sits on its
its fore feet like a squir
marked peculiarities, a
cific name of *lotor*, or th
is its habit of plungi
water before eating it.
pert in opening oysters
as on crabs and other cr
feeds. Although when
its active and playful h
and not easily recom
In its wild state it ge
hollows of trees; but w
shows no particular inc

position of similar parts around a common centre. Their organs of motion, when they have any, are movable spines attached to the skin, or flexible papillæ, capable of inflation. They have no true system of circulation, and their nervous system is always obscure, and sometimes cannot be traced. Some have a mouth and vent, others only one opening, and others appear to be nourished through pores. Some are of distinct sexes; some hisexual, and some are produced by buds or division. Many grow in clusters upon stalks, or Polypidoms — dwellings of polypi, — which are sometimes leathery or horny, and sometimes calcareous.

RAIL. (*Rallus.*) A genus of Wading-birds, of which there are many species. They are distinguished by a very compressed form of body, with wings of a middling length, rounded, and the first quill shorter than the second, third, or fourth. They seldom fly, but run or swim with celerity: they frequent large ponds or lakes, the borders of which are well clothed with plants; and they subsist on vegetables and seeds, as well as on insects, snails, and worms.

The Common European Water Rail (*Rallus aquaticus*) is nearly twelve inches long. It has a red beak shaded with brown at the tip; irides orange; throat whitish; the sides of the head, neck, breast, and belly are of an ashy lead-colour: all the feathers on the upper parts of the body are reddish-brown, with a deep black mark in the centre of each; the flanks are deep black, transversely rayed with white bars; the under tail-coverts are white; the legs lead-coloured. The young of the year have the middle of the belly of a brown-red, and are destitute of the white band on the sides.

This bird is not very common in Britain, though it is found throughout the country, and continues with us all the year: it is said to be very numerous in the northern countries of Europe, migrating southward during the severity of winter: it is very abundant also in Germany, France, and Holland. It is shy and solitary in its habits, resorting to low damp situations overgrown with sedges, reeds, and coarse herbage, among which it shelters, and is seldom put to flight unless pressed by the dogs, rather depending on its legs for safety; but when once flushed it is easily shot, as it flies in a heavy and awkward manner, with its legs hanging down: it runs, however, very fast, and frequently flits up its tail. Though it swims, and even dives well occasionally, it delights most in shallow water, where it can wade through without swimming. Its nest is constructed of sedges and coarse grass amongst the thickest aquatic plants; and it lays from six to ten eggs, of a yellowish colour, spotted with red-brown.

The Virginian Rail (*Rallus Virginianus*) very much resembles the European Water Rail described above; but it is smaller, and has more of the slate or lead colour on the breast. It feeds more on animal and less on vegetable food than the common and more numerous species known as the Clapper Rail. During the months of September and October, when the reeds and wild oats swarm with the latter, feeding on their nutritious seeds, there are but few of the Virginian Rail to be met with. The food of this species consists of small snails, worms, and the larvæ of insects, which it extracts from the mud; hence the cause of its greater length of bill, to enable it the more readily to search its food. In most of its habits, its thin compressed form of body, its aversion to take wing, and the dexterity with which it runs or conceals itself among the grass and sedge, are exactly similar to those of the common Rail. The Virginian Rail is migratory, never wintering in the northern or middle States. It makes its first appearance in Pennsylvania early in May, and leaves the country on the first smart frosts, generally in November. They frequent those parts of the salt marshes only where fresh-water springs rise through the bogs, and in these places the female usually constructs her nest. The usual number of eggs is from six to ten: they are shaped like those of the

AMERICAN RAIL.—(RALLUS VIRGINIANUS.)

domestic hen, and are of a dirty white or pale cream-colour, sprinkled with specks of reddish or pale purple, most numerous near the great end. This species is ten inches in length: bill, dusky red; cheeks and stripe over the eye, ash; over the lores and at the lower eyelid, white; crown and whole upper parts, black, streaked with brown, the centre of each feather being black; wing-coverts, hazel-brown; quills, plain deep dusky; chin, white; throat, breast, and belly, orange-brown; sides and vent black, tipped with white; legs and feet, dull red-brown; edge of the bend of the wing, white.

RALLIDÆ. A family of birds (the Rails, Gallinules, Water-hens, &c.), chiefly distinguished by their long and slender toes, often with a membranous margin along their sides; by means of which, and their generally compressed bodies, they are not only enabled to support themselves on the aquatic herbage which is seen floating on the surface of the water, but to move with great facility through high grass, bulrushes, and other closely-set herbage. Mr. Swainson describes them "for the most part as solitary and timid birds, hiding themselves at the least approach of danger, but quitting their semi-

aquatic retreats in the morning and evening, to feed in more open spots: their flight, from the shortness of their wings, is very feeble, but they run with swiftness; and by the peculiarly compressed form of their body, are able to make their way through dense masses of reeds and high grass with so much facility as to escape even after being desperately wounded. The flesh of all these birds is delicate; and from living chiefly upon aquatic seeds and vegetable aliment, they may be considered as aquatic Gallinaceæ. The Jacanas and Screamers of tropical climates are often placed in this family; their general structure and habits rendering such an arrangement quite natural.

RAMPHASTIDÆ. A family of birds, found in tropical America, distinguished by their very large notched bill, and a peculiarly long feather-like tongue. [See TOUCAN.]

RANA. [See FROG.]

RANELLA. A genus of Molluscs, whose shells are for the most part covered with tubercles and granulations, and which, from the colour and squat shape of some of the species, have been likened to frogs (*rana*), whence their name. The shell is ovate or oblong, depressed, and thick, with two rows of varices situated at the distance of half a whorl from each other, and longitudinally united, forming a continued ridge on each side of the shell. They are mostly from the Indian seas. A few fossil species occur in the London clay.

RAPHIDIA: RAPHIDIIDÆ. A genus and family of Neuropterous insects, which are of comparatively small size, and of active habits; the structure of the head and neck, powerful jaws, and the elongated coxæ of the legs, as well as the membranous attachment of the segments of the body, indicating predaceous habits. They are chiefly found in the neighbourhood of woods and streams; and from the form of the head and neck, and the facility with which they turn the front of the body in different directions, they have received the English name of Snake-flies. The wings are moderately large, strongly veined, and of nearly equal size, the posterior not folded when at rest, when they are deflexed at the sides of the body; the maxillæ and labium are distinct, with short palpi; the legs are short; the abdomen is unarmed; the eyes resemble occili, and are situated near the base of the antennæ. The pupa resembles the perfect insect in general form, but is furnished only with short rudiments of wings, lying at the sides of the body, and is not inclosed in a cocoon.

RAPTORES. The name given to an order of Birds—*Birds of prey*. They are characterized by a strong, curved, sharp-edged, and sharp-pointed beak, suitable for tearing the flesh of the animals they devour; their legs are short and robust; and their toes, equally vigorous, are furnished with strong hooked talons, by which they seize their prey. Considerable strength is also indicated by the general formation of the body; and their whole appearance bespeaks a ferocious character. Some are [illegible] guished by their dense plumage, and [illegible] lateral direction of their eyes; as th[illegible] tures, Falcons, Eagles, Hawks, Ba[illegible] &c. Others are characterized by the [illegible] plumage, and by the anterior direc[illegible] their full round eyes: these are noc[illegible] and constitute the family of Owls; a[illegible]

A NAPTURAL SEAS.

from the former kinds by their sh[illegible] their food rather by the stealthine[illegible] which they approach it, than by th[illegible] with which they attack it. The [illegible] always associate in pairs, the sam[illegible] and females continuing to live tog[illegible] not pairing anew every season, as is [illegible] with many of the feathered tribe be[illegible] to other Orders. They generally ba[illegible] nests in the loftiest situations, and ar[illegible] destitute of the power of song. Th[illegible] birds are long dependent upon their [illegible] for support, which chiefly devolves [illegible] female.

RASORES. An Order of Birds [illegible] also *Gallinaceæ*). They have str[illegible] provided with obtuse claws for s[illegible] up grains, seeds, &c., of which th[illegible] principally consists. Their bodies [illegible] the most part bulky, and their leg[illegible] but their wings not being of a size [illegible] tionate to their bulk, their powers [illegible] are inconsiderable. The beak is [illegible] arched, and surrounded at the be[illegible] soft skin, in which the nostrils are [illegible] They are polygamous, the male t[illegible] part in the construction of the n[illegible] the nurture of the young. General[illegible] ing, the Birds of this order are [illegible] mesticated; they multiply with [illegible] pidity; and as they furnish Ma[illegible] large quantity of wholesome and [illegible] food, they are justly entitled to hi[illegible] regard. Most of them fly badly, do [illegible] on trees, and seek their food on the [illegible] [See GALLINACEÆ.]

RAT. (*Mus decumanus.*) The [illegible] RAT is a large, destructive, and ve[illegible] species of the genus *Mus*, originally [illegible] to Europe from Asia, and not, as is [illegible] though erroneously supposed, [illegible] this country from Norway. [illegible]

Whenever it conveniently can, s its hole very near the edge of here it chiefly resides during the ing on small animals, fish, and o haunts the corn-fields, where rows, and breeds. When winter it draws near some farm-house, in the corn, where it consumes astes more. It destroys rabbits, all sorts of game; and scarcely feebler animals can escape its Its astonishing fecundity," Mr. s, "its omnivorous habits, the retreats, and the ingenious de- h it has recourse, either to retain place of abode, or to migrate to urable situation, all conduce to almost overwhelming numbers. great facility and vigour, making rapidity beneath the floors of etween the stones and bricks of len excavating the foundations to a dangerous extent. There stances of their fatally under- most solid mason-work, or bur- gh dams which had for ages nfine the waters of rivers and

ton, to whom in the course of we have so often been indebted ological facts and interesting given his readers some "Notes ory and Habits of the Brown or which are not the less *genuine* ther whimsical. "It is known ," says he, "sometimes by the Norwegian, sometimes by that rerian, Rat. Though I am not there are any minutes in the rchives of this country which us the precise time at which e and mischievous little brute d among us; still, there is a ent in this part of the country, it was sent, some few years ago, to Nostell Priory, in a cage, from Bristol; and I received an invitation from Mr. Arthur Strickland, who was on a visit there, to go and see it. Whilst I was looking at the little native prisoner in its cage, I could not help exclaiming—'Poor injured Briton! hard indeed has been the fate of thy family! in another generation at farthest it will probably sink down to the dust for ever. Vain would be an attempt to trace the progress of the stranger Rat through England's wide domain, as the old people now alive can tell nothing of its coming amongst them. No part of the country is free from its baleful presence: the fold and the field, the street and the stable, the ground and the garret, all bear undoubted testimony to its ubiquity and to its forbidding habits. After dining on carrion in the filthiest sink, it will often manage to sup on the choicest dainties of the larder, where, like Celæno of old, 'vestigia fœda relinquit.' We may consider it saddled upon us for ever. Hercules himself, could he return to earth, would have his hands full, were he to attempt to drive this harpy back again to Stymphalus. It were loss of time to dwell on its fecundity. Let any body trace its movements in the cellar, the dairy, the outhouse, and the barn, and he will be able to form some notion of the number of hungry mouths which we have to fill. Nine or ten young ones at a time, twice or thrice during the year, are an enormous increase, and must naturally recall to our minds one of the many plagues which formerly desolated the fertile land of Egypt. In the summer months it will take off to the fields, and rear its young amongst the weeds which grow in the hedgerows; plundering, for their support, the birds' nests with a ferocity scarcely conceivable in so small an animal. Man has invented various instruments for its destruction; and what

it scents at a great distance; it will also destroy rabbits, young ducks, and chickens; nay, it has been known to seize on young lambs, and even sheep when sick and weak, and pick out their eyes while yet alive; in short, the Raven is a most voracious plunderer; and whether his prey be living or dead he greedily devours it. "Considered as a domestic bird, the Raven possesses many qualities which render him extremely amusing: active, curious, and impudent, he goes every where; pries into every thing; runs after dogs; plays tricks with poultry; and with great skill and address insinuates himself into the favour of the cook-maid, sensible of her ability to reward him for his attachment and attention." It has often been taught to pronounce a variety of words; and, being a crafty bird, it will frequently pick up things of value, and carry them to its hiding place. They build early in the spring, in trees and the holes of rocks, laying five or six eggs, of a pale bluish green, spotted with brown. The female sits about twenty days, her mate not only providing her with abundance of food during the time, but relieving her in turn, and taking her place in the nest.

Upon the fate of the Raven in modern times our old and oft-quoted friend thus feelingly apostrophises:—"Pity it is that the Raven, a bird of such note and consequence in times gone by, should be exposed to unrelenting persecution in our days of professed philanthropy. His noble aspect, his aërial evolutions, and his wonderful modulations of voice, all contribute to render him an ornament to any gentleman's park. He can scarcely be styled a bird of rapine, in the strict sense of the word; for, in the few inland parts of this country where he is still protected, we hear of no very alarming acts of depredation on his part. A stray chicken or so, during the time that he is obliged to feed his young—a rickety lamb which would never make mutton—a leveret started from her seat by the village mole-catcher—make up nearly the whole amount

covered with the com
cartilaginous, straigh
numerous swellings o
very numerous, small
over the lips or edges
are furnished with a n
skin, which can at pl
them like an eyelid;
above the eyes are sit
appearing like a larg
lunar opening edged
behind the eyes are li
communicating with
But the most distin
the Ray kind is the
different species have
their bodies: some
both above and below
their upper parts on
spines at their tails;
of them; while other
some species the spi
soft and feeble; but i
and piercing; and it
the different species ar
in general feed on
testacea, marine inse
concealed during par
the mud or sand, from
ally emerge. When
along in an undula
slight motion of the
attacked, they defend
violently with the ta
nished with sharp
general observations
necessary only to d
species.

The Painted Ray
The Painted, or Small
by Mr. Yarrell as the
British Rays in regard
its colours. "The up
gray, with a lighter li
back and middle of t
central row of spines.
and beautifully qua
white lines enclosing

two other lines passing from be-
xpansion circularly to the neigh-
f the abdominal fins, the convexity
h inwards; on the more central
e disc are a few whitish spots,
th sides answering to each other;
e edge of the disc posterior to its
pansion, and also the abdominals,
he fin-like margin of the tail, are
h white." Length thirty-three
eadth across the fins twenty-four:
ry small, three inches apart, and
and a half from the snout: the
ed with rough granulations, but
without spines, except a row that
two-thirds of the back, and down
e of the tail to the fins; and an
ow of similar hooked spines, ex-
ong each side of the tail.

O RAY. (*Raia pastinaca.*) The
this fish is subrhomboidal, but
approaching to ovate, snout
nd body rather convex: colour
olive above, and whitish beneath:
at fin, of considerable length, very
e base, and gradually tapering to
nity, which is very slender: near
, on the upper part, it is armed
ery long, flattened, and sharp-
one or spine, finely serrated in a
irection on both sides: with this
al is capable of inflicting very
nds on such as incautiously at-
andle it; and it answers the pur-
of an offensive and defensive wea-
is annually cast; and as it fre-
happens that the new spine has
a considerable size before the old
een cast, the fish is occasionally
two, in which state it has some-
n erroneously considered as a
pecies. This species, which is
among the edible Rays, is an in-
f the Mediterranean, Atlantic, and
a. On account of the danger at-
e wounds inflicted by the spine, it
ith the fishermen to cut off the
n as the fish is taken, and in some
it is illegal to sell it before this
done. The spine was formerly
o contain a most active poison;
otion, like many others in zoology,
roneous, has long since been ex-

eral habits of the Sting Ray are
those of the rest of the genus,
flat on the soft mud at the bottom
es which it frequents, and there
prey by surprise; while at other
rsues it through the depths of the

-BILL. (*Alca torda.*) [See AUK.]

-SHELL. [See SOLEN.]

VIROSTRA. [See AVOSET.]

DMIRAL (BUTTERFLY). A
by collectors to Butterflies of the
Atalanta.

RD, of SURINAM. (*Ampelis*
See CHATTERER, RED.]

RED-BIRD of CAROLINA. (*Cardinalis rubra.*) This bird is of the size of a Skylark: the bill is thick, strong, and of a palish red colour, with a black ring round the base; on the head is a crest, which it can raise and depress at pleasure; and the whole body is of a fine scarlet colour, except the back and tail, which are of a dark red. The hen is brown, with a reddish hue on the wings, &c. In America this bird is caged for its song as well as for its beauty.

REDBREAST. (*Rubecula familiaris.*) This well-known favourite song-bird, called also the Robin-Redbreast or simply the Robin, has a slender and delicate bill; large, black, and expressive eyes; and a mild familiar aspect: the head and all the upper parts are brown, tinged with greenish olive; the forehead, throat, and breast are of a fine deep reddish orange colour; the belly and vent dull white; and the legs dusky.

REDBREAST.—(RUBECULA FAMILIARIS.)

In spring the Redbreast retires to woods and thickets, where, with its mate, it prepares for the accommodation of its future family. The nest, constructed of moss and dried leaves, intermixed with hair and lined with feathers, is placed near the ground, by the roots of trees, and sometimes in old buildings, but always artfully concealed as much as possible. The female lays from four to eight eggs, of a dull white, with reddish spots. During the time of incubation, the male sits at no great distance, and makes the woods resound with his enlivening strains; while he exerts no common watchfulness in driving all intruders from his little settlement. As soon as the business of incubation is over, and the young are able to provide for themselves, he leaves his retirement, and again draws near the habitations of mankind: when the frost grows severe, and the snow covers the ground, he approaches the house, taps at the window with his bill, and solicits an admission, which is always cheerfully granted.

"Half afraid, he first
Against the window beats; then brisk alights
On the warm hearth; then, hopping o'er the floor
Eyes all the smiling family askance,
And pecks, and starts, and wonders where he is:
Till, more familiar grown, the table crumbs
Attract his slender feet." THOMSON.

Most of the soft-billed birds, such as the famed Nightingale, and its congeners, leave us in the winter, when their insect

have attained their full plumage, they prepare for their departure from woods and thickets; but in thus changing their situation, they do not gather in flocks, but perform their journey singly, one after another; which, as Bewick has observed, is a singular circumstance in the history of this bird. It is worthy of note, also, that social as it is with the human race, it lives in a state of continued hostility with its own tribe, and has acquired a character for petulance and pugnacity which it well deserves. But where such universal favour is shown, there must surely be some cause for it; and whether its domestic qualities entitle it to our regard, or our kindlier sympathies have been first awakened by a legendary tale of the nursery, is of little importance, so long as either the one or the other serves to implant in the youthful breast a single humane or generous sentiment. "A favourite by commiseration, the Redbreast seeks an asylum with us; by supplication and importunity it becomes a partaker of our bounty in a season of severity and want; and its seeming humbleness and necessities obtain our pity; but it slights and forgets our kindnesses the moment it can provide for itself, and is away to its woods and its shades. Yet it has some little coaxing ways, and such fearless confidence, that it wins our regard; and its late autumnal song, in evening's dusky hour, as a monologue, is pleasing, and redeems much of its character."

To one of the poet Wordsworth's Sonnets, addressed to a "Wild Redbreast" which had pecked at his lip in the woods of Rydal, the author has appended the following characteristic note: "The scene of the incident having been a wild wood, it may be doubted, as a point of natural history, whether the bird was aware that his attentions were bestowed upon a human, or even a living, creature. But a Redbreast will perch upon the foot of a gardener at work, and alight on the handle of a spade when his hand was

on insects; to procu
fields of maize and
only a slight plaint
is placed in the hole

RED DEER. [Se

RED-POLE, or R
BLER. (*Splviecola p*
bird inhabits Penns
its first appearance
the autumn. It has
pointed bill; the top
upper parts of the
the tail, olive green
dusky, with yellow
of the plumage are
on the breast and b
dusky. It frequents
solitary species.

REDSHANK. (T
is an aquatic bird,
common Plover: the
greenish brown colo
the neck is gray; t
with black and wh
streaks of black; an
a mixture of black,
bill is long, slender,
a woodcock, reddish
lower down, and the
This bird breeds in f
generally observed
pairs. When distu
nest, making a nois
lays four eggs, of a
with olive, and mark
of black.

REED-BUNTING
chus.) [See BUNTING.

REGENT BIRD.
phalus.) A very be
to the *Meliphagidæ*
in the eastern portio
and described by M
brated work as one o

of the secondaries and inner webs of all the first primary, deep velvety black; secondaries bright gamboge-yellow, with rrow edging of black along the inner ; the first primary is entirely black, ext have the tips and outer webs black e half of the inner web and that part e shaft not running through the black re yellow; as the primaries approach econdaries, the yellow of the inner web ds across the shaft, leaving only a black on the outer web, which gradually ws until the tips only of both webs re- black; bill yellow; irides pale yellow; and feet black. The plumage of the le is totally different, the prevailing r being a dull brownish white on the , throat, and breast, with the wings and pale olive-brown: the young males re- ling them until they gradually change e livery of the adult. Their food con- of ripe fruits, berries, and seeds. A few mens of this bird were lately brought to this country, and were in the pos- on of Mr. Warwick.

EGULUS. A genus of Passerine birds, times called *Kinglets*, and identical or closely allied to the Wrens. The DEN-CRESTED WREN (*Regulus cristatus*) pposed to be the least of all European ; being less than three inches and a in length, and when stripped of its ers the body is only about an inch

GOLDEN-CRESTED WREN, (REGULUS CRISTATUS.)

The bill is slender and dark; eyes ; on the top of its head the feathers of a bright orange colour, bordered on side with black, which forms an arch e the eyes, and with which it some- r conceals the crown, by contracting the les of the head; the upper part of the is yellowish olive green; all the under pale reddish white, tinged with green e sides; the greater coverts of the wings husky brown, edged with yellow, and d with white: legs yellowish brown. female is distinguished by a pale yellow n; and her whole plumage is less than of the male. This delightful little fairy frequents the largest trees, such as elms, tall pines, and firs, particularly irst, in which it finds both food and r; in these it builds its nest, which is rded like a hammock, from a branch ind of cordage made of the materials ich the nest is chiefly composed; it is of an oblong form, having an aperture on one side, and is made principally of moss, lined with the softest down, mixed with slender filaments: the female lays from six to a dozen eggs, scarcely larger than peas, which are white, sprinkled with very small dull-coloured spots. These birds are very agile, and are almost continually in motion, fluttering from branch to branch, creeping on all sides of the trees, clinging to them in every situation, and often hanging like the Titmouse. Their food consists chiefly of the smallest insects, which they find in the crevices of the bark of trees, or catch on the wing; they also eat the eggs of insects, small worms, and various sorts of seeds. The song of the Golden-crested Wren is said to be very melodious, but weaker than that of the common Wren; and it has besides a sharp shrill cry, somewhat like that of the Grasshopper. The species is diffused throughout Europe; it stays with us the whole year; and is able to bear great extremes of temperature. There are two other European species, the *R. ignicapillus* and *R. modestus*, the former of these is occasionally found in this country. Three closely allied species are found in North America. These are the *R. Satrapa*, the species regarded by Wilson as similar to the European *R. cristatus*, the *R. Cuvieri*, and the *R. Calendula*.

REDSTART. (*Ruticilla phœnicurus.*) This is a beautiful little bird belonging to the family *Sylviadæ*, rather more than five inches in length. The bill, legs, and claws are black; the forehead is white; the crown of the head, hind part of the neck, and the back are of a deep blue gray colour; the cheeks and throat are black; the breast, rump, and sides are red; and the two middle feathers of the tail are brown; the belly is white. The female differs considerably from the male: her colours are less vivid; the top of the head and back are ash gray; chin white. The Redstart visits us about the

REDSTART.—(RUTICILLA PHŒNICURUS.)

middle of April, and takes its departure at the end of September or the beginning of October. Though wild and timorous, it is frequently found in the midst of cities, always choosing the most inaccessible places for its residence: it likewise builds in the holes of forest trees, or in high and dangerous precipices. Its nest is chiefly composed of moss, lined with hair and feathers. It is

distinguished by a peculiar quick shake of its tail from side to side, when it alights. These birds feed on flies, spiders, ants' eggs, soft fruits, berries, &c.

The AMERICAN REDSTART (*Setophaga ruticilla*), which belongs to the family *Muscicapidæ*, is described by Wilson as one of the most expert flycatchers of its tribe. He says, "it is almost perpetually in motion; and will pursue a retreating party of flies from the tops of the tallest trees, in an almost perpendicular, but zig-zag direction, to the ground, where the clicking of its bill is distinctly heard; and I doubt not but it often secures ten or twelve of these in a descent of three or four seconds." Wherever flying insects abound, there this little bird is sure to be seen. It builds frequently in low bushes, or on the drooping branches of the elm, within a few feet of the ground, fastening its nest to two twigs; outwardly it is formed of flax, well wound together, and moistened with its saliva, interspersed here and there with pieces of lichen, and lined with a very soft downy substance. The female lays five white eggs, sprinkled with gray and blackish specks. The general colour of the plumage above is black, which covers the whole head and neck, and spreads on the upper parts of the breast in a rounding form; where, as well as on the head and neck, it is glossed with steel blue; sides of the breast below this, black; the inside of the wings, and upper half of the wing-quills, are of a fine orange colour; belly and vent, white, slightly streaked with pale orange; legs black. This species has the constant habit of flirting its extended tail from side to side, as it runs along the branches, occasionally shooting off after winged insects. Its notes are few and feeble, repeated at short intervals, as it darts among the foliage.

REIN-DEER. (*Cervus tarandus.*) The Rein-deer is an inhabitant of the most northerly regions. In Europe its chief residence is in Lapland and Norway; in Asia it frequents the north coast as far as Kamtschatka, and the inland parts as far as Siberia; and in America it is common in

REIN-DEER.—(CERVUS TARANDUS.)

Greenland, but does not extend farther south than Canada. They have long been domesticated, and their appearance and habits have been minutely described by many travellers and naturalists. They are about four feet six inches in height. Their horns are remarkably long and slender, and they have branched, recurved, round antlers, the summits of which are palmated. The body is of a thick and

square form; and the legs short
portion than those of the stag; bu
be observed that the size varies
to the climate, those in the Arct
being the largest. The colour of
deer is brown above and white
but as it advances in age, it often
a grayish-white, and sometimes
tirely white: the space about t
always black: the under part of
is much longer than the rest, an
kind of hanging beard. Both
horns, but those of the male are m
and longer than those of the fem
hoofs are long, large, and black,
the false or secondary hoofs bel
these latter, while the animal is
make by their collision a remark
tering sound, which may be heard
siderable distance.

It is an observation no less true
that to the Laplanders this animal
stitute for the horse, the cow, and t
harnessed to the sledge, the Rein-d
over the frozen lakes and river
equally hardened surface of the
milk they make their cheese; its
plies them with food; and the ski
them not only with clothing,
their tents and bedding. In short
mal is deservedly celebrated for
to the simple and harmless inha
Lapland, who, undisturbed by the
war, or the anxieties which comme
lead a kind of pastoral life, even
frozen limits of the arctic circle,
no other cares than those of pro
the rigours of their long winte
rearing and supporting their numer
of Rein-deer, which may be said
tute almost their whole wealth. Som
indeed, have eulogized the great
of the Laplanders in terms too ex
for the sober pen of truth, and, qu
scriptive prose, have indulged in th
reveries of poetical fiction; thus—

"Here stands secure, beneath the north
O sacred Innocence, thy turf-built dw
'Tis here thou wav'st aloft thy snowy w
Far from the pride of courts and peop

But, in fact, if the poor Lapl
really so happy, it arises from
ignorant of the wants of luxury,
by the sterility of his native land,
non-intercourse with highly civil
polished nations. Their state of
indeed, some serious drawbacks. T
may be said to continue nearly alm
and is of a rigour unknown in
southern regions of the world; th
invisible for a certain period, and t
and stars, with the frequent cur
of the aurora borealis, and the
from the snow, constitute the
afforded by nature. The short su
the contrary, when once fairly
is scarcely less oppressive, from the
able legions of musquitoes, which
such a degree in the marshy distri
oblige the inhabitants, in order
abroad with common comfort, to
faces with a mixture of tar and

d are frequently more than twelve
breadth. The other, called the
division, lies to the east of this,
from the neighbouring provinces
by its soil, which is exceedingly
barren, being covered with one
tract of wood, of old pine-trees.
has a very singular appearance.
above are covered over with great
of a black hanging lichen, grow-
aments resembling locks of hair,
ground beneath appears like snow,
ally covered with white lichens.
his wood and the Alps lies a region
Woodland, or Desert Lapmark,
or forty miles in breadth, of the
e and horrid appearance, consist-
attered and uncultivated woods,
nued plains of dry barren sand,
ith vast lakes and mountains.
mosses on part of this desert tract
burnt, either by lightning or
ntal fire, the barren soil immе-
roduces the white lichen which
lower parts of the Alps. The
in summer seek their highest
there dwell amidst their storms
not to fly the heat of the lower
t to avoid the gnat and gad-fly.
these intensely cold mountains,
reach high into the atmosphere,
nger support them, and they are
return to the desert and subsist
lichens."

e natives of North America," to
rds of a contemporary writer, "the
is only known as a beast of chace,
most important one: there is hardly
he animal which is not made avail-
me useful purpose. Clothing made
n is, according to Dr. Richardson,
ous to the cold, that, with the ad-
a blanket of the same material,
e clothed may bivouack on the

REMORA.—(ECHINEIS REMORA.)

by Pliny and other ancient naturalists with all possible gravity and good faith; among others, that Antony's ship, at the battle of Actium, was kept motionless by the exertions of the Remora, notwithstanding the efforts of several hundred sailors; and that the vessel of Caligula was detained between Astura and Actium by another of these fish found sticking to the helm, and whose solitary efforts could not be countervailed by a crew of four hundred able seamen, till several of the latter, on examining into the cause of the detention, perceived the impediment, and detached the Remora from its hold. The real fact is, that the fins of this fish are particularly weak, on which account it attaches itself to various bodies, and is found not only fastened to ships, but to whales, sharks, and other fishes; and with such extreme tenacity is this hold maintained, that, unless the effort of separation be applied in a particular direction, it is impossible to effect the disunion without the destruction of the fish itself. In stormy and boisterous weather, the Remora, like the lumpfish and some others, will also often adhere to rocks.

The Remora is principally an inhabitant of the Mediterranean and Atlantic seas. Its general colour is an uniform brown; the skin smooth and destitute of scales, but marked with numerous impressed points or pores: the mouth is large, and furnished with very numerous small teeth; and the lower jaw is rather longer than the upper: the eyes are small, with yellow irides: the lateral line commences above the pectoral

consists of an oval area on the top of the head, traversed by numerous partitions, each of which is fringed at the end by a row of very numerous perpendicular teeth, or filaments, while the whole oval space is strengthened by a longitudinal septum.

REPTILES. (*Reptilia.*) The name given to a class of cold-blooded vertebrated animals, whose movements are usually confined to crawling and swimming, and whose respiration is aerial and incomplete. They have the heart so constructed that at each contraction a portion only of the blood received from the various parts of the system is sent into the lungs, the remainder of this fluid returning into the general circulation without having passed through the lungs, and consequently without having been subjected there to respiration. Hence it results that the action of oxygen upon the blood is less than in the Mammalia; and though several of them leap and run with celerity on certain occasions, their habits are generally sluggish, their digestion excessively slow, their sensations obtuse, and, in cold or temperate climates, they pass nearly the whole winter in a state of lethargy. In their general form, Reptiles approach Mammalia nearer than Birds; but they offer in this respect many variations, as may be seen by comparing together, a Tortoise, a Crocodile, a Serpent, and a Frog. Their head is almost always small, and their body very much lengthened out; some, as Serpents, are entirely destitute of members, or have only traces of them; but the greater number of these animals, the Lizard and Frog for instance, have four limbs, formed so as to serve for walking or swimming. The skeleton in this class presents much greater variations in its structure, than in warm-blooded Vertebrata. All the parts of which it is composed are wanting in one or another group, excepting the head and the vertebral column; but the bones of which these are composed always preserve a great resemblance to those of Mammalia and Birds, and are easily recognized as being analagous to them. Their brain, which is proportionally very small, is not so essentially requisite to the exercise of their animal and vital faculties as in the Mammalia; for they continue to live and to execute voluntary movements for a considerable time after being deprived of the brain, and even after the loss of the head: their muscles also preserve their irritability for a considerable time after being severed from the body; and their heart continues to pulsate for hours after it has been torn from the body. Reptiles dive with more facility, and remain longer under water than either the Mammalia or Birds, the smallness of the pulmonary vessels permitting them to suspend the process of respiration, without arresting the course of the blood. No Reptile hatches its eggs. Some on quitting the egg have the form and gills of fishes; and certain genera retain these organs even after the development of their lungs. In other Reptiles which produce eggs, the young is already formed and considerably advanced within the egg at the time the parent deposits it. Reptiles also present more varied forms, characters, and modes of gait, than the other classes of animals; and it is in their production more especially, that Nature seems to have tried to imagine grotesque forms, and to have modified in every possible way the general plan adopted for all vertebrated animals, and for the oviparous classes in particular.

Reptiles are endowed with five senses, but none of them in great perfection. In those species which are covered with scales or plates, the sense of touch is very obtuse; and in the species which have a naked skin, such as the Frog, it is also weak, in consequence of not being adherent to the body, but envelopes it like a bag. In the Serpents the eyes are immovable, destitute of eyelids, and covered with a corneous substance; in some genera three eyelids are distinguishable, while others are destitute of sight. Their nostrils are small, and they appear to have a very weak sense of smell. They have no delicacy of taste, for almost all the species swallow their food entire; and those in which the tongue is soft and flexible, this organ serves chiefly as an instrument for the seizure of their food. None of them have true fleshy lips; and some, such as the Tortoises, are provided with a horny bill, like that of a parrot; others have teeth of various forms, which are not, however, formed for mastication, but to assist in holding their prey. Various serpents have hollow fangs, which they can erect at pleasure, when they open their mouths to bite, and these fangs have apertures, from which they inject into the wounds made by them an active and deadly poison.

From the earliest times the forms and habits of the reptile world attracted attention, and appear to have been pretty well understood. The ancient monuments of the Egyptians show this; and numerous passages in the Old Testament prove that a similar knowledge existed when the Scriptures were written. Nor must it be forgotten that among the Organic Remains which the industry and science of inquiring minds have lately brought to light, none present forms more wonderful, or proportions more gigantic, than some of the Fossil Reptiles. [See ICHTHYOSAURUS; IGUANODON; PLESIOSAURUS.]

RETEPORA. A genus of the Polypiferous corallines which is allied to *Eschara*, and has the leaf-like expansion pierced like net-

[illegible]

work; our figure will show the appearance of this genus. The species represented is often called Neptune's Ruffles, and is the *Knorpora cellulosa* of naturalists. It is some of the recent species; there are others found in a fossil state.

RHEA. [See Ostrich, American.]

RHINOCEROS. (*Rhinoceros.*) This large and uncouth-looking Pachydermatous genus inhabits the hotter regions of Asia and Africa, and, next to the Elephant, contains the most powerful of quadrupeds. The common Indian Rhinoceros (*R. unicornis*) is usually about twelve feet long from the tip of the nose to the insertion of the tail; its height is about seven feet; and the circumference of its body is nearly equal to its length. The back, instead of rising, as in the Elephant, sinks in considerably; the head is moderately large and long; the upper lip protrudes considerably, and being extremely pliable, answers the end of a small proboscis: but its most distinguishing mark is the possession of a solid, slightly curved, sharp-pointed horn, which rests on a strong arch

INDIAN RHINOCEROS.
(RHINOCEROS UNICORNIS.)

formed by the nasal bones. This horn is sometimes (but not generally) as much as three feet in length, and eighteen inches in circumference at its base, and is used as a most powerful and effective weapon. The animal is also characterized by having seven molars on each side above and below, with only four incisors, and no canine teeth. The ears are moderately large, upright, and pointed; the eyes small and half closed. The skin is thick and coarse, with a knotty or granulated surface; and so impenetrable on the body and limbs, as to resist either the claws of the lion or the tiger, the sword or the shot of the hunter. About the neck the skin is disposed in several large plaits or folds; another fold passes from the shoulders to the fore legs, and another from the hind part of the back to the thighs. The tail is slender, flattened at the end, and covered on the sides with very stiff and thick black hairs: the belly is somewhat pendulous; the legs very short, strong, and thick; and the feet divided into three large hoofs, all standing forwards. In India the Rhinoceros leads a tranquil indolent life, wallowing in the marshy borders of lakes and rivers, and occasionally bathing itself in their waters. Its *movements are usually slow; and it carries its head low, like the Hog, ploughing up the ground with its horn,* and making its way by sheer force through the jungle. It is naturally of a quiet and inoffensive disposition, but very furious and dangerous when provoked or attacked; charging with great impetuosity, and trampling down, or ripping up with its horn, any animal which opposes it. The bones of the Rhinoceros, like those of the Elephant, are often found in a fossil state in various parts of the world; and in the year 1772 an entire Rhinoceros was found buried in the banks of a Siberian river, in the ancient frozen soil, with the skin, tendons, and some of the flesh, in the highest state of preservation.

The Two-horned Rhinoceros. (*Rhinoceros bicornis.*) This species is found in various parts of Africa, and seems to have been the kind known to the ancient Romans, and by them exhibited in their public shows and combats of animals. In size it equals the common or single-horned species; and its habits and manner of feeding are the same: but it differs greatly in the appearance of its skin, which, instead of the vast and regularly marked armour-like folds of the former, has merely a slight wrinkle across the shoulders, and on the hinder parts, with

AFRICAN RHINOCEROS.

a few fainter wrinkles on the sides; so that, in comparison with the common Rhinoceros, it appears almost smooth: the skin, however, is rough or tuberculated: but what constitutes the specific or principal distinction is, that the nose is furnished with *two* horns, one of which is smaller than the other, and situated higher up; and that they are fixed to the nose by a strong apparatus of muscles and tendons, so that they are loose when the animal is in a quiescent state, but become firm and immovable when he is enraged. His manner of feeding, with some other particulars, is thus given by Mr. Bruce, the Abyssinian traveller. He informs us, that, "besides the trees capable of most resistance, there are, in the vast forests within the rains, trees of a softer consistence, and of a very succulent quality, which seem to be destined for his principal food. For the purpose of gaining the highest branches of these, his upper lip is capable of being lengthened out so as to increase his power of laying hold with this in the same manner as the Elephant does with his trunk. With this lip, and the assistance of his tongue, he pulls down the upper branches which have most leaves, and these he devours first; having stripped the tree of its branches, he does not therefore abandon it, but, placing his snout as low in the trunk as he finds his horns will enter, he rips up the body of the tree, and reduces

it to [illegible], like so many laths; and when he [illegible] prepared it, he embraces as much of it as he can in his monstrous jaws, and twists it round with as much ease as an ox would do a root of celery. When pursued, and in fear, he possesses an astonishing degree of swiftness, considering his size, the apparent unwieldiness of his body, his great weight before, and the shortness of his legs. He is long, and has a kind of trot, which, after a few minutes, increases in a great proportion, and takes in a great distance; but this is to be understood with a degree of moderation. It is not true that in a plain he beats the horse in swiftness. I have passed him with ease, and seen many worse mounted do the same; and though it is true that a horse can seldom come up with him, this is owing to his cunning, and not his swiftness. He makes constantly from wood to wood, and forces himself into the thickest part of them. The trees that are frush, or dry, are broke down, like as with a cannon shot, and fall behind him and on his sides in all directions. Others that are more pliable, greener, or fuller of sap, are bent back by his weight and the velocity of his motions. And, after he has passed, restoring themselves like a green branch to their natural position, they sweep the incautious pursuer and his horse from the the ground, and dash them in pieces against the surrounding trees. The eyes of the Rhinoceros are very small, and he seldom turns his head, and therefore sees nothing but what is before him. To this he owes his death, and never escapes if there is so much plain as to enable the horse to get before him. His pride and fury, then, make him lay aside all thoughts of escaping, but by victory over his enemy. He stands for a moment at bay, then, at a start, runs forward at the horse, like the wild boar, whom, in his manner of action, he very much resembles. The horse easily avoids him, by turning short aside; and this is the fatal instant; the naked man, with the sword, drops from behind the principal horseman, and, unseen by the Rhinoceros, who is seeking his enemy, the horse, he gives him a stroke across the tendon of the heel, which renders him incapable of further flight or resistance."

Another species of Rhinoceros, less powerful and savage, is found in Java; of this we figure the skull, which will serve also to illustrate the structure of the head; a third, which possesses two horns, in Sumatra; and

SKULL OF RHINOCEROS JAVAGUS.

three species are said to be known in Africa; but the most formidable are those we have described. The skin of the Rhinoceros is an article in great demand in several countries of Asia and Africa. It is manufactured into the best and hardest leather that can be imagined; and targets and shields are made of it, that are proof against even the stroke of a scimitar. When polished, the skin is very similar in appearance to tortoise shell. Their *horns* are manufactured into drinking cups, the hilts of swords, and snuff-boxes, by several oriental nations; and in the palmy days of ancient Rome, we are told, the ladies of fashion used them in their baths, to hold their essence bottles and oils.

In M. de Blainville's great work on the Osteography of the Vertebrates, he admits five living species as indisputable; two of which are African — the black rhinoceros of the Cape (*R. bicornis*), and the white rhinoceros of Southern Africa, first distinguished by Dr. Burchell (*R. simus*); three are Asiatic — the Rhinoceros of India (*R. unicornis*), the rhinoceros of Java, with one horn (*R. Javanus*), and that of Sumatra, with two horns (*R. Sumatranus*). Dr. Andrew Smith discovered a third species, distinguished, among other peculiarities, by the great length of the second horn. This is the *Rhinoceros Ketloa*, described by that distinguished naturalist; a fine specimen of it exists in the collection of the British Museum. Some accounts would likewise lead us to believe in the existence of a rhinoceros in Africa with one horn, which would form another species to be added to the preceding.

Among the fossil rhinoceroses, M. de Blainville admits but three European species as certain. The first is the rhinoceros with partitioned nostrils (*R. tichorhinus*). This species, destitute of incisors, had three toes on each foot, the cranium elongated, the nostrils separated by a bony partition; its nose was provided with two horns; its molars approached those of the *Rhinoceros canus*; its bones were short and strong, and its body covered with hair. On this subject he remarks, that these hairs have sometimes been erroneously described as forming a long and thick fur, but at most they did not exceed three lines in length. *R. tichorhinus* is found in the deposits formed during the diluvian epoch. It is probable that it inhabited Siberia, and the greater part of Europe. This is the species which has been found preserved in the ice of the North of Asia. The second species is the rhinoceros with nostrils not partitioned (*R. leptorhinus*), which had persistent incisors, but concealed in the gums, three toes on each foot, two horns, an elongated cranium, and slender bones. This species, which is not so well characterised as the preceding, has been found chiefly in the superior tertiaries of Italy and the south of France. M. de Blainville likewise refers the bones found in caverns in the south of France to *R. tichorhinus*, while those of the north and of Belgium contain only the remains of the preceding species. — The third species is the rhinoceros with incisors (*R. incisivus*), characterised by half salient incisors in the two jaws, four toes on the anterior feet, flat molars, &c. It would

...ocosa antiqua Sivalensis: the origi-
...reserved in the British Museum.
...ars that rhinoceroses have not ex-
...ing the whole commencement of
...ry epoch, for the eocene formations
...race of them. They have appeared,
...st time, in the middle or miocene
...uring which the *R. incisivus* has
...l the greater part of Europe. To-
...e close of the tertiary epoch this
...as been replaced by the *R. lepto-*
...nd during the diluvian epoch, it is
...*hinchinus* which has been the most
...t and most widely diffused. In the
...lay rhinoceroses do not exist in
...and are only found in the warmest
... We find three species in Africa,
...es in Continental Asia, and two in
...a Islands. America and New Hol-
...e not any at present, and do not
...o have possessed any in the epoch
...to our own.

...DURA. [See FANTAIL.]

...OSTOMA. A genus of Acalephæ,
...a close external resemblance to the

...ALOCERA. The first section of the
...ers, in the recent Classification of
...or, responding with the genus *Papilio*
...and deriving its name from gene-
...ing the antennæ, which are thin
...gated, ...rminated by a knob. This
...omprises the well-known tribes of
...s, whose elegant forms and beau-
...urs may be mistaken for "winged
...flying gems." They vary greatly
...s well as in the diversity of their
...here, in our native fields, we have
...ies not an inch across the wings,
... India and South America are to
...flattering in the sun's warm rays,
...specimens nine or ten inches in

birds allied to the Snipes. The species RHYNCHŒA AUSTRALIS, which is a summer visitant of New South Wales, in its habits and disposition partakes both of the true Snipes and the Sandpipers; running about, like the latter, among the rushes or on the bare ground at the edge of the water. Olive-green, with narrow bars and marblings of dark brown, is the prevailing colour; and a pale buff stripe runs from the bill down the centre of the head to the nape; breast and all the under surface white; legs pale green. The male is much smaller than the female, and has the sides, back, and front of the neck much lighter and mingled with patches of white; wings more olive, the coverts ornamented with numerous large irregular patches of buff, encircled with a narrow line of black; the buff bands on the primaries richer and more distinct; the scapularies speckled with white; the patch on each side of the chest dark olive, with large patches of white surrounded by a line of black. The plumage of the female, contrary to the general rule, is darker, richer, and more distinctly defined. Mr. Gould says that on dissection be observed an anatomical peculiarity of a very extraordinary nature, the more so as it exists in the female alone; namely, the great elongation of the trachea, which passes down between the skin and the muscles forming the breast for the whole length of the body, making four distinct convolutions before entering the lungs. This was afterwards examined by Mr. Yarrell, who states that the form and position of the trachea in the *Rhynchæa Australis* is similar to that of the Semipalmated Goose, figured in the 15th volume of the Trans. Linn. Soc. Tab. 14.

RHYNCHOPHORA. An extensive group or subsection of Coleopterous insects, distinguished by the front of the head being produced into a long snout or rostrum, at the extremity of which is the mouth. The

urnal insects, and love to come out of their retreats and enjoy the sunshine. Some of them fly well; but others have no wings, or only very short ones, under the wing-cases, and are therefore unable to fly. They walk slowly, and being of a timid nature, and without the means of defence, when alarmed they turn back their antennæ under the snout, fold up their legs, and fall from the plants on which they live. The larvæ have strong and horny jaws, with which they gnaw those parts of plants which serve for their food. Some of them bore into and spoil fruits, grain, and seeds; some attack the leaves and stems of plants, causing them to swell and become cankered; while others penetrate into the solid wood, interrupt the course of the sap, and occasion the branch above the seat of attack to wither and die. Most of these grubs are transformed within the vegetable substances upon which they have lived; some, however, when fully grown, go into the ground, where they are changed to pupæ, and afterwards to beetles. This subsection corresponds with the Linnæan genera Bruchus, Attelabus, and Curculio. Some of the most extraordinary species of Rhynchophorous insects compose the South African genus Antliarhinus, in one sex of which the rostrum is nearly three times as long as the body, porrected, and as thin as a fine needle. In the great work of Schœnherr on these insects at least 7000 species are described or alluded to.

RHYNCHOPS. We learn from Wilson's American Ornithology, that this truly singular bird was the only species of its tribe discovered at the time he wrote. Another species at least, the *R. orientalis* has been since found in Africa. The species whose history we here subjoin is the BLACK SKIMMER; or SHEERWATER. (*Rhynchops nigra.*) It is a bird of passage in the United States, and makes its first appearance on the shores of New Jersey early in May. It resides there, as well as along the whole Atlantic coast, during the summer, and retires early in September. Its favourite haunts

BLACK SKIMMER.—(RHYNCHOPS NIGRA.)

are low sand bars, raised above the reach of the summer tides; and also dry flat sands on the beach in front of the ocean. Early in June these birds form themselves into small societies, fifteen or twenty pair frequently breeding within a few yards of each other. The nest is a mere hollow formed in the sand; and the female lays three eggs, almost perfectly oval, of a clear white, marked with large round spots of brownish black, and intermixed with others of a paler dusky hue. The female sits on them only during the night, or in wet and stormy weather. The young remain for several weeks before they are able to fly; are fed with great assiduity by both parents; and seem to delight in lying with loosened wings, flat on the sand, enjoying its invigorating warmth. They breed but once in the season. The Sheerwater is formed for skimming, while on wing, the surface of the sea for its food, which consists of small fish, shrimps, young fry, &c., whose usual haunts are near the shore, and towards the surface. That the lower mandible, when dipt into and cleaving the water, might not retard the bird's way, it is thinned and sharpened like the blade of a knife; the upper mandible being, at such times, elevated above water, is curtailed in its length, as being less necessary, but tapering gradually to a point, that, on shutting, it may offer less opposition. To prevent inconvenience from the rushing of the water, the mouth is confined to the mere opening of the gullet, which, indeed, prevents mastication taking place there; but the stomach, or gizzard, to which this business is solely allotted, is of uncommon hardness, strength, and muscularity, far surpassing in these respects any other water bird with which I am acquainted. To all these is added a vast expansion of wing, to enable the bird to sail with sufficient celerity while dipping in the water. The general proportion of the length of our swallow-tailed hawks and swallows, to their breadth, is as one to two; but in the present case, as there is not only the resistance of the air, but also that of the water, to overcome, a still greater volume of wing is given, the Sheerwater measuring nineteen inches in length, and upwards of forty-four in extent. In short (says Wilson), whoever has attentively examined this curious apparatus, and observed the possessor, with his ample wings, bending neck, and lower mandible, occasionally dipt into and ploughing the surface, and the facility with which he procures his food, cannot but consider it a mere sport, amusement, when compared with the labo immersions of the tern, the gull, or the hawk, who, to the superficial observer, appear so superiorly accommodated.

The voice of the Sheerwater is harsh screaming, resembling that of the tern, stronger. It flies with a slowly flapping flight, dipping occasionally, with extended pointed wings and bended neck, its lower mandible into the sea, and, with open mouth receiving its food as it ploughs along the surface. It is rarely seen swimming on the water, but frequently rests in large flocks on the sand bars at low water. The length and breadth of this bird we believe to be as nineteen inches by forty-four; the upper half of the lower mandible is four inches long, both of a scarlet red, tinged with yellow; the upper mandible is four inches and a half; of the upper, three inches and a half; and ending in black; the lower extremity of the upper, three inches and a half; and ending in black; the upper grooved, so as to receive the thin edge of the lower; the latter is also grooved, but in a contrary direction, placed to be received by the upper mandible; and edge of the upper mandible

over the lower: upper part
k, back, and scapulars, deep
he same, except the second-
e white on the inner vanes,
with white; tail forked, the
hers being about an inch and
than the exterior ones, all
edged on both sides with
rts, white on the outer side,
iddle; front, passing down
the eye, throat, breast, and
arts, pure white; legs and
light scarlet. The female is
male, but the colours and
ry similar. The Sheerwater
rious coasts of Asia, as well
ding principally near the
grating into the temperate
ne for the purpose of rearing
is rarely or never seen far
must not be mistaken for the
trel (a species of *Puffinus*),
th on every part of the ocean,
g with bended wings.

SH. (*Cepola.*) A genus of
ous fishes belonging to the
r. The peculiar characters of
indicated by the name; the
stinguished by their length-
such flattened at the sides,
y small scales. In this family
s; one having the muzzle

—(CEPOLA RUBESCENS.)

mouth deeply cleft, with
at teeth, and the lower jaw
ond the upper: the other
nding genera which have the
nd little cleft. These occur
ranean, the Indian, the At-
e Arctic Seas; and some of
eet in length. A third tribe
short, and the mouth cleft

. (*Loxia oryzivora.*) This
bout the size of a Greenfinch,
ays, and is sometimes called
row. The bill is extremely
a fine red colour above and
t towards the point, where
le space of white. The eyes
the irides red. The whole
except a white oval spot on
the neck, breast, back, and
wings, are of a fine bluish
rump being somewhat lighter
while the ash-colour on the
gradually towards the *belly*
colour, *terminating in a dirty*
ower quill-feathers, as well
ail, are black; the legs and

feet are of a faint red hue; and the claws are of a dingy white. From the general

RICE-BIRD.—(LOXIA ORYZIVORA.)

plumage being remarkably smooth and even, this bird derives a peculiar beauty.

RICE-BUNTING, RICE-BIRD, or BOB-O-LINK. (*Dolichonyx oryzivorus.*) The specific characters of this bird are—tail-feathers very acute; adult male, in spring dress, black, the hind head yellowish white; scapulars, rump, and tail-coverts, white, tinged with ash. The Rice-Bunting migrates over the continent of America from Labrador to Mexico, and over the Great Antilles, appearing in the southern extremity of the United States about the end of March. Their food is insects and worms, and the seeds of the grassy meadows. In the autumn they sometimes attack the crops of oats and barley. The song of the male continues, with little interruption, as long as the female is sitting, and is singular and pleasant; it consists of a jingling medley of short, variable notes, confused, rapid, and continuous. The relish for song and merriment is confined to the male; but he

RICE-BUNTING—MALE.
(DOLICHONYX ORYZIVORUS.)

generally loses his musical talent about the end of the first week in July, from which time, or somewhat earlier, his plumage begins to lose its gay colours, and to assume the humble hue of that of the female. About the middle of August they enter New York and Pennsylvania, on their way to the south. There, along the shores of the large rivers lined with floating fields of wild rice, they find abundant subsistence, grow fat, and their flesh becomes little inferior in flavour to that of the European Ortolan; on which account the Reed or Rice-birds, as

they are then called, are shot in great numbers. When the cool nights in October

RICE-BUNTING.—FEMALE.
(POLICHONIX OBTIVORUS.)

commence, they move still farther south, till they reach the islands of Cuba and Jamaica.

RIFLE BIRD. (*Ptiloris Paradiseus.*) This magnificent bird which Mr. Gould considers is without exception the most gorgeously plumaged one yet discovered in Australia, is found in the south-eastern portion of that country, inhabiting the "brushes." The general colour of the male is a rich velvety black, glossed on the upper surface with brownish lilac; under surface similar, but all the feathers of the abdomen and flanks broadly margined with rich olive-green; feathers of the head and throat small, scale-like, and of a shining metallic blue-green; two centre tail-feathers rich shining metallic green, the remainder deep black; bill and feet black. But while the male is adorned with hues only equalled by some species of the *Trochilidæ* or Humming-birds, the dress of the female is remarkably plain and sombre. The Rifle Bird's powers of flight are very limited, arising from the shortness and truncate form of the wing; but owing to that structure it ascends the upright boles of trees precisely after the manner of the *Climacteri*, many of whose habits it possesses.

RING-DOVE. (*Columba palumbus.*) This is the largest of all the Pigeon tribe, measuring above seventeen inches in length. Its bill is pale red; the eyes pale yellow; the upper parts of the body bluish ash, deepest on the upper parts of the back; the head and fore part of the neck, pale ash gray; the lower part of the neck and breast, vinous ash; the belly, thighs, and vent, dull white. It receives its name from having a semicircular line of white on the hinder part of the neck, above and beneath which the feathers are glossy, and of a varying hue according to the light in which they are seen; the greater quills are dusky, and all of them excepting the outermost, edged with white; from the point of the wing a white line extends downwards, the bastard wing; the tail is as with black; legs red, and p with feathers; claws black. T is very generally diffused th rope; and is said to be migra it is certain that there are m main and regularly breed he dom fly singly, but in large fl subsist on grain, acorns, ivy other wild fruits. Their co and more plaintive than that Pigeon, but is not heard exc time, or during fine weather.

"The Ring-dove," as Mr. serves, "lays two snow-white which may be termed a plat so sparingly put together, th easily seen through it by an to look for them. On inspe parent commencement or con one is led to surmise, at the fi the young are necessarily exp

RING DOVE.—(COLUMBA P

a cold and bitter blast during this ever-changing climate. pers the wind,' said Maria, lamb;' and in the case befo teaches the parent bird to sit spring for a longer period hatched than, perhaps, any feathered tribe. In the me droppings of the young, which of some species carefully con allowed to remain in the nest dove. They soon form a ki strong and scentless. This ad to the nest, producing, at the defence against the cold. The while going his autumnal be knowledge, on seeing this, w mediately that the nest has con should this be wanting, he that the nest has been abandon period. As he will find but with this species of plaster in conclude, to a certainty, that has a host of enemies in this that it is seldom fortunate e its young to that state in whi of flying saves them from de bird in the British dominions to so many trees and shrubs f of incubation as the Ring-dove from the towering pine to th ever comes amiss to it. a winter months they are exce

timorous, seeking for safety in lofty flight, the moment they see you approach. They become quite silent towards the last week in October, and their notes are reduced to half their number for some days before they cease to coo entirely. At this period they discontinue those graceful risings and sinkings in the air, in which they appear to so much advantage during the whole of the breeding season. * * * As yet, all attempts to reclaim this Pigeon have been of no avail. I should suppose it is not in the power of man to make it breed within the walls of a dovecot."

RINGLET [BUTTERFLY]. A name given by collectors to the species *Hipparchia Hyperanthus*.

RIVULET [MOTHS]. A name given by collectors to species of Moths of the genus *Emmelesia*.

ROACH. (*Cyprinus rutilus*.) This fish inhabits deep, still, and clear rivers; is considered coarse rather than delicate; and in general weighs from about a pound to a pound and a half, though it is occasionally larger. Its shape it is deep, but rather thin; the back much arched; the scales large and

ROACH.—(CYPRINUS ROTILUS.)

easily deciduous; and the lateral line is considerably incurvated towards the abdomen. Its general colour is silvery, with a cast of dull yellow, growing more dusky on the upper parts: fins red; dorsal fin rather small, and situated on the middle of the back; tail slightly forked. The Roach is a gregarious fish, always swimming in large shoals, and feeding on worms and herbs. It generally spawns about the middle of May, and is very prolific. Although in no great esteem in this country, it is considered in many parts of Europe as an excellent fish for the table, its flesh being white and firm.

ROBIN. The REDBREAST [which see]. Also the name given in America to the *Turdus migratorius*. Nearly every country has its "Robin;" colonists assigning the name to the most familiar Red-breasted bird which occurs in the land of their adoption. Thus the Robins of Great Britain, America, New Holland, or other countries, belong to very different genera.

RODENTIA. RODENT or GNAWING ANIMALS. This name is given to an Order of mammiferous quadrupeds, occupying, in many respects, an intermediate place between the purely carnivorous and purely herbivorous Mammalia, *and so forming the connecting link between them. Like the Carnivora, they are unguiculated, or furnished with claws*; but the chief peculiarity of this order is seen in the remarkable conformation of the teeth. They have two long chisel-shaped incisors in each jaw, by some zoologists said to be canines, and a vacant space between the incisors and the molars. The conformation of the gnawing teeth is beautifully adapted to the purpose they have to fulfil: they are required to have a sharp edge, in order to make their way through tough vegetable substances, and they must at the same time be very strong and firm; this is effected by the principal substance of the tooth being composed of very tough *ivory*, with a plate of hard *enamel* in front only, which latter, wearing most slowly, is always left as a sharp projecting edge. The molar teeth, which are separated from the canines by a wide interval, are composed of alternate plates of enamel and ivory, which, wearing unequally, stand up in ridges, and give them a rasp-like surface. The ridges are always transverse, or in a direction from side to side of the head; and as the lower jaw has considerable facility of moving backwards and forwards, it greatly increases the power of trituration. In the frugivorous species of the Order, however, the surface of the molar teeth is raised into rounded tubercles, as is the case with the Squirrel, for instance; whilst in those animals which have any carnivorous tendency, as in the Rat, they are raised into sharp points, thus bearing some resemblance to those quadrupeds which are wholly carnivorous. At the same time, it should not be forgotten that there are some animals belonging to the Order *Rodentia*, whose propensities to devour almost anything that falls in their way, are such as to be entitled to the term omnivorous. The animals composing this order are mostly of small size; some are docile and gentle, whilst others are savage and untameable; their instinctive powers are great, but they possess not much sagacity. In form they may be said to be disproportionate, the posterior limbs being generally much larger than the anterior; they rather leap than walk; and most of them have the habit of sitting upon their haunches, and of using their fore paws for the prehension of food, &c. The brain of the Rodents is, as Cuvier remarks, nearly smooth and without convolutions; the orbits are not separated from the temporal fossæ, which have but little depth; the eyes are entirely directed laterally; the zygomatic arches, delicate and curved below, plainly indicate the weakness of their jaws; the anterior limbs have scarcely any rotary motion, and their two bones are nearly united; in short, the inferiority of these animals shows itself in the greater part of the details of their organization. Nevertheless, the genera which have the strongest clavicles enjoy a certain dexterity, and use their fore feet for carrying their food to their mouth; while others (the squirrels for instance) climb trees with the utmost facility.

ROEBUCK, or ROE DEER. (*Cervus Capreolus*.) Although there are very few, if any, of this light and agile species of the Deer tribe in England, they are still to be

met with in the mountainous parts of Scotland, making their couches, like hares, among the heather. In size they are far inferior to the Fallow Deer, being only about two feet four inches in height, and three feet six inches in length. They are of a reddish brown colour on the back, the chest and belly yellowish, and the rump white: the horns are about nine inches long, round, and divided into three branches. The Roebuck seems naturally attached to shady thickets and rising slopes. All its motions are elegant

ROEBUCK.—(CERVUS CAPREOLUS.)

and easy; bounding with the utmost facility, and continuing the course with little apparent fatigue. In many essential particulars, this animal differs from its congeners; not merely in its lightness of figure and limb, but in its appetites, inclinations, and general habitudes. Instead of herding together in large communities, these Deer live in separate families; the sire, the dam, and the young associating together, to the exclusion of all others. Every other species of Deer is inconstant in affection; but the Roebuck never forsakes its mate.

The female goes with young about five months; when she forms a retreat in the thickest part of some wood, and generally produces two at a birth, which she carefully conceals from the buck. The fawns continue to follow the dam eight or nine months, and, on separating, their horns begin to appear, simple and without ramification the first year, as in those of the stag; these they shed at the end of autumn, and renew them during the winter; differing from the stag in this particular, the latter shedding his horns in the spring, and renewing them in the summer. The Roebuck can easily be subdued, but never perfectly tamed. No arts can teach it familiarity with its feeder, much less to show any attachment to him; but it always retains some portion of its natural wildness.

ROLLER. (*Coracias.*) A genus of birds allied to the Crows and Jays, in general distinguished by peculiar elegance and splendour of colours. They are very shy, inhabiting the thickest and most unfrequented woods, though, like the crows, they are frequently seen in newly ploughed fields, searching for worms and larvæ. They are more wild and untractable than their congeners, and do not appear to possess the imitative faculty of the Jay or Magpie. These birds, of which there are several species, are found in Asia, Africa, and the more parts of America; but only one is a native of Europe. This is

The COMMON or GARRULOUS ROLLER. (*Coracias garrula.*) This bird is frequently met with in Italy, France, Spain, and many other parts of Europe, but is seldom seen in England. It is about the size of a Jay, and of an elegant shape. The bill is black, straight, and hooked at the point; the orbits of the eyes bare, and beyond each eye is a small bare spot or protuberance. The head, neck, breast, and under parts are of a light bluish or sea-green colour; the back, and

ROLLER.—(CORACIAS GARRULA.)

feathers of the wings next to it, are of a reddish brown; the shoulders, or smaller wing-coverts, are of a rich ultra-marine blue; the larger coverts bright sea-green; the lower part of the smaller wing-feathers ultra-marine blue, forming a tolerably large patch of that colour on the middle of the wing; the remainder of the wing black: the back and scapular feathers pale chestnut; the rump a fine deep blue, as are also the under parts; and the tail is of a dull green, the two outer feathers, which are rather longer than the rest, being tipped with black. The legs, which are short, are of a dirty yellow hue. Its note is loud and chattering; hence its specific name.

THE INDIAN ROLLER. (*Coracias Indica.*) In size this bird is nearly equal to the Common Roller, and is remarkable for the rich and vivid appearance of its colours. The crown of the head is greenish blue; the remainder, with the back, scapulars, rump, and breast, pale ferruginous; the feathers of the throat and upper part of the breast each marked by a paler streak down the shaft; the belly, thighs, and vent are sea-green; the whole wing is varied with deep and light blue, so as to divide it into five alternate bands; the deep or predominating colour being the richest small blue, while the paler or middle part is a most brilliant blue-green, changing, according to the direction of the light, into pure pale blue, and forming a delightful contrast with the other. The tail is

ie vivid appearance as the wings ; nd the tips being deep blue, and e part pale or greenish-blue. In e the two exterior tail-fathers do ct beyond the rest. The bill is d the legs reddish brown. Native parts of India and the Indian

(*Corvus frugilegus.*) Both in size the Rook greatly resembles the row ; their colour is also similar, age of each being glossed with a c : the principal distinction between pecies is found in the bill of the base of which is covered with a rous skin. These birds are very and build close to each other in nerally in the midst of large and owns. In these aerial abodes they a kind of legal constitution, and e to fix their domicile among them owledged natives of the place. are, in consequence, often the bitter contests ; the half-built ew corners torn in pieces, and the te couple forced to begin anew ore undisturbed situation. At the ment of spring the Rooks begin to r nests ; and one of them brings while the other watches the build- it should be plundered by its All the old inhabitants, however, dy provided with nests ; those ed them in former years requiring le trimming and dressing to render dly commodious with new habita-

(CORVUS FRUGILEGUS.)

e young Rooks indeed are unpro- they do not long remain so. As male and female have fixed on e branch, they begin to collect aterials ; the outside of the nest chiefly of sticks, and the inside ed with fibrous roots ; the whole and substantially arranged. It nerally happens that some of the ake umbrage at the young ones e choice of a spot too near the r forever ; hostilities ensue, and emoval is the consequence ; but ion ceases whenever the *female* y, and not *one of the whole co- therwards molest her. They are and fly in immense flocks morn-* ing and evening to and from their roosting-places in quest of food.

Rooks are often accused of feeding on the corn just after it has been sown, and various methods have been contrived both to kill and frighten them away ; but persons who have paid the most attention to this subject are of opinion that the advantages derived from the destruction which they make upon grubs, larvæ, worms, and noxious insects, greatly overpay the injury done to the future harvest, by the small quantity of corn they may destroy in searching after their favourite food. But as much has been written on this oft-disputed question, as well as on the instincts of Rooks, a few extracts in this place may not be deemed inappropriate.

"When the waters retire from meadows and low lands, where they have remained any time, a luxurious banquet is provided for this *corvus*, in the multitude of worms which it finds drowned on them. But its jubilee is the season of the cockchafer (*melolontha vulgaris*), when every little copse, every oak, becomes animated with it and all its noisy, joyful family, feeding and scrambling for the insect food. The power or faculty, be it by the scent, or by other means that rooks possess of discovering their food, is very remarkable. I have often observed them alight on a pasture of uniform verdure, and exhibiting no sensible appearance of withering or decay, and immediately commence stocking up the ground. Upon investigating the object of their operations, I have found many heads of plantains, the little autumnal dandelions, and other plants, drawn out of the ground and scattered about, their roots having been eaten off by a grub, leaving only a crown of leaves upon the surface. This grub beneath, in the earth, the Rooks had detected in their flight, and descended to feed on it, first pulling up the plant which concealed it, and then drawing the larvæ from their holes. By what intimation this bird had discovered its hidden food we are at a loss to conjecture ; but the Rook has always been supposed to scent matters with great discrimination."—*Journ. of a Naturalist.*

"The Rook entices its young from the breeding trees as soon as they can flutter to any other. These young, for a few evenings after flight, will return with their parents, and roost where they were bred ; but they soon quit their abode, and remain absent the whole of the summer months. As soon, however, as the heat of summer is subdued, and the air of autumn felt, they return and visit their forsaken habitations, and some few of them even commence the repair of their shattered nests ; but this meeting is very differently conducted from that in the spring ; their voices have now a mellowness approaching to musical, with little mixture of that harsh and noisy contention, so distracting at the former season, and seems more like a grave consultation upon future procedure ; and as winter approaches they depart for some other place. The object of this meeting is unknown ; nor are we aware that any other bird revisits the nest it has once forsaken." —*Ibid.*

throughout. In flocks it builds its nest, in flocks it seeks for food, and in flocks it retires for food." . . . . "Sometimes these birds perform an evolution, which is, in this part of the country, usually called the shooting of the Rooks. Farmers tell you, that this shooting portends a rousing wind. He who pays attention to the flight of birds has, no doubt, observed this downward movement. When Rooks have risen to an immense height in the air, so that, in appearance, they are scarcely larger than the lark, they suddenly descend to the ground, or to the tops of trees exactly under them. To effect this, they come headlong down, on pinions a little relaxed, but not expanded, in a zig-zag direction (presenting alternately their back and breast to you), through the resisting air, which causes a noise similar to that of a rushing wind. This is a magnificent and beautiful sight to the eye of an ornithologist. It is idle for a moment to suppose that it portends wind. It is merely the ordinary descent of the birds to an inviting spot beneath them, where, in general, some of their associates are already assembled, or where there is food to be procured. When we consider the prodigious height of the Rooks at the time they begin to descend, we conclude that they cannot effect their arrival at a spot perpendicular under them by any other process so short and rapid." "Rooks remain with us the year throughout. If there were a deficiency of food, this would not be the case; for, when birds can no longer support themselves in the place which they have chosen for their residence, they leave it, and go in quest of nutriment elsewhere. Thus, for want of food, myriads of wild fowl leave the frozen north, and repair to milder climates; and in this immediate district, when there is but a scanty sprinkling of seeds on the whitethorn bush, our flocks of Fieldfares and of Redwings bear no proportion to those in times of a plentiful supply of their favourite food. But the number of Rooks never visibly diminishes; and on this account we may safely conclude

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BOSE-BEETLE.
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day the Rose-beet

close ashen-yellow down; the thorax is long and narrow; the legs are slender, and of a pale red colour; the joints of the feet are tipped with black and are very long, which caused Latreille to call the genus *Macrodactylus*, that is, long toe or long foot. The natural history of the Rose Chafer, according to this very observant and intelligent writer, shows it to be one of the greatest scourges with which the gardens and nurseries in the "States" are afflicted, and was for a long time involved in mystery. "For some time after they were first noticed, rose-bugs appeared to be confined to their favourite, the blossoms of the rose; but within thirty years they have prodigiously increased in number, have attacked at random various kinds of plants in swarms, and have become notorious for their extensive and deplorable ravages. The grape-vine in particular, the cherry, plum, and apple trees, have annually suffered by their depredations; many other fruit-trees and shrubs, garden vegetables and corn, and even the trees of the forest and the grass of the fields, have been laid under contribution by these indiscriminate feeders, by whom leaves, flowers, and fruits are alike consumed. The unexpected arrival of these insects in swarms, at their first coming, and their sudden disappearance, at the close of their career, are remarkable facts in their history. They come forth from the ground during the second week in June, or about the time of the blossoming of the damask rose, and remain from thirty to forty days. At the end of this period the males become exhausted, fall to the ground, and perish, while the females enter the earth, lay their eggs, return to the surface, and, after lingering a few days, die also. The eggs are hatched about twenty days after they are laid; and the young larvæ begin to feed on such roots as are within their reach. They attain their full size in the autumn, being then nearly three quarters of an inch long, and about an eighth of an inch in diameter. They are of a yellowish white colour, with a tinge of blue towards the hinder extremity, which is thick and obtuse or rounded. In October they descend below the reach of frost, and pass the winter in a torpid state. In the spring they approach towards the surface, and each one forms for itself a little cell of an oval shape, by turning round a great many times, so as to compress the earth and render the inside of the cavity hard and smooth. Within this cell the grub is transformed to a pupa, during the month of May, by casting off its skin, which is pushed downwards in folds from the head to the tail. The pupa has somewhat the form of the perfected beetle; but it is of a yellowish white colour, and its short stump-like wings, its antennæ, and its legs are folded upon the breast, and its whole body is enclosed in a thin film, that wraps each part separately. During the month of June, this filmy skin is rent, the included beetle withdraws from it its body and its limbs, bursts open its earthen cell, and digs its way to the surface of the ground. *Thus the various changes, from the egg to the full development of the perfected beetle, are completed within the space of one year.*

Such being the metamorphoses and habits of these insects, it is evident that we cannot attack them in the egg, the grub, or the pupa state; the enemy, in these stages, is beyond our reach, and is subject to the control only of the natural but unknown means appointed by the Author of Nature to keep the insect tribes in check. When they have issued from their subterranean retreats, and have congregated upon our vines, trees, and other vegetable productions, in the complete enjoyment of their propensities, we must unite our efforts to seize and crush the invaders. They must indeed be crushed, scalded, or burned, to deprive them of life, for they are not affected by any of the applications usually found destructive to other insects. Our insect-eating birds undoubtedly devour many of them, and deserve to be cherished and protected for their services. They are also eaten greedily by domesticated fowls; and when they become exhausted and fall to the ground, or when they are about to lay their eggs, they are destroyed by moles, insects, and other animals, which lie in wait to seize them."

ROSTELLARIA. A genus of Molluscous animals, inhabiting the seas of hot climates, or rather the muddy sand on their coasts. The body is subcylindrical, marbled with rich brown on the outer side, and white on the inner and front side: the trunk is subcylindrical, and annulated with a central broad line of deep bronze-black: the margins yellow with a narrow vermillion line externally. The eyes are on long cylindrical peduncles, of a deep blue with a black pupil: the tentacula are subulate, elongate, arising from the peduncle rather below the eye. The foot is narrow, rather dilated in front and small behind: the operculum is ovate, triangular, annular, semi-transparent, and horny. Like the *Strombidæ*, it progresses by means of its powerful and elastic foot, which it places under the shell in a bent position, when suddenly by a muscular effort it straightens that organ and rolls and leaps over and over. The shell is oblong, turreted, and acuminated; the spire long, consisting of numerous whorls.

ROTELLA. A genus of Mollusca, inhabiting a smooth, shining, orbicular shell, with a conical spire, and horny operculum; left lip very thick, and spreading over the under surface so as to form a callosity. The animal has two very long and pointed tentacula, with eyes at the base; foot short.

ROTIFERA. The name of a class of highly organised Infusorial Crustaceans, commonly called WHEEL-ANIMALCULES (*Rotifer vulgaris*), &c. These wonderfully minute objects possessing life and motion (some of them less than the 500th part of an inch in length!) are of course wholly invisible to the naked eye, but their structure is beautifully revealed to us by the powers of the microscope. Nearly all of them are aquatic in their habits; their bodies are transparent, and consequently their general structure is to be easily recognised. They have usually an elongated form, semi-

action creates rapid currents in the surrounding fluid, by which the supply of food is obtained. Between the wheels the head is occasionally protruded, bearing two red spots, supposed to be eyes; and on its under surface there is a projecting tubular spike, which is believed to act as a syphon for the introduction of water into the general cavity for the purpose of respiration. The microscope alone reveals the wonderful structure and variety of the animals of this class. Mr. Brightwell of Norwich was the first who discovered the males, while Mr. Gosse has confirmed and extended our knowledge of these interesting Crustaceous animals. He is preparing a fine work on the subject, with admirable drawings.

RUDD, or RED-EYE. (*Cyprinus erythrophthalmus.*) This Acanthopterygious fish, which is from eight to ten inches long, is very common in many of the lakes and rivers of the European continent, and is found in the Thames and various other rivers in the British islands. It has a small head, blunt nose, and orange-coloured irides; back arched, and sloping rather suddenly towards the head and tail; scales large: general colour pale gilded olive, the back being browner, and the whole varying when viewed in different positions in reference to the light: the fins more or less bright red or reddish-brown; dorsal fin rather small, and placed beyond the middle of the back: tail forked. It is said to be a better fish to eat than the Roach, with which it corresponds in size and weight.

RUFF. (*Machetes.*) A genus of Wading birds belonging to the *Scolopacidæ* family. The Ruff (*Machetes pugnax*) is a bird of a very pugnacious character; the female of which is called the REEVE. It is about a foot in length; and is principally distinguished by a very remarkable circle of long feathers round the neck, whence it receives its name: in some birds these feathers are black, in others white, yellow, or ferruginous; and even in the same bird they fre-

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most useful to Man. In the first they furnish him with nearly all the flesh which he consumes. Some of rve him as beasts of burden; and apply him with milk, tallow, hides, nd other products most important mfort, and even to his subsistence. f them have from the earliest periods mesticated, and have accompanied his gradual diffusion over the globe; one, as the Rein-deer and Camel, inable in certain localities, to which expressly and admirably adapted.

IC [MOTHS]. A name given by rs to species of Moths, of the genera s, *Rusina*, *Caradrina*, and *Segetia*.

ELIDÆ. A group of Coleopterous in some respects allied to the Melo- e and Cetoniadæ. The body is rounder, and more polished than in rabseidæ, and ornamented with bril- lours. The head and thorax are iden- d not cornuted in either sex; the are scaly, truncated at the tip, with ix strong teeth. The mesosternum is rrected, the scutellum large, and the laws unequal-sized. With few excep- ey are confined to the warmer parts rica. Dr. Thaddeus Harris has de- a well-known American species. He One of the most common and the eautiful of the Tree-beetles of this is the *Arcoda lanigera*, or woolly , sometimes also called the GOLD- BEETLE. It is about nine-tenths of in length, broad oval in shape, of a yellow colour above, glittering like ed gold on the top of the head and the under side of the body is copper- d, and thickly covered with whitish and the legs are brownish-yellow, or shaded with green. These fine beetles appear in Massachusetts about the of May, and continue generally till of June. In the morning and even- light they come forth from their re- and fly about with a humming and sound among the branches of trees, der leaves of which they devour. ees are particularly subject to their , but the elm, hickory, poplar, oak, bably also other kinds of trees, are ted and injured by them. During

granules of clay or fine mud. The species are rather large, and their branchial tufts extremely delicate.

SABLE. (*Mustela zibellina.*) Of all the Weasel tribe this is the most celebrated, not only on account of the richness of its fur, but from the horrors of the chace, which is carried on in the depth of winter among mountains covered with ice and snow, in the coldest and most desolate regions into which man has yet penetrated. The Sable has long whiskers, rounded ears, large feet, the soles of which are covered with fur, white claws, and a long bushy tail. The general colour of the fur is brown, more or less brilliant, with the lower parts of the throat and neck grayish. They resemble the rest of the weasel kind in vivacity and agility; in sleeping by day, and hunting their prey by night: they usually live in the depths of the forest, in holes of the earth, or beneath the roots of trees; and sometimes, like the marten, they form their nests in the boughs of trees. The females bring forth from three to five young at a time, which they suckle for a month or five weeks. They inhabit all the northern parts of Europe and Asia; and as prodigious numbers are killed in Siberia, their skins form a very considerable article of commerce with the Russians.

Sables' skins are in the highest perfection betwixt the months of November and January; accordingly, at the commencement of the winter, the Sable hunters assemble in very considerable companies, and proceed along the great rivers in boats, taking with them provisions for three or four months. When they arrive at their place of rendezvous, the different parties, each under the direction of a leader, take up their respective quarters, where they form huts of trees, and bank up the snow round them: near these they lay their snares; and then advancing farther, they set more, still building new huts in every quarter, and returning successively to every old one, to visit the traps, from which they take the game and skin it. Their snares or traps are generally a sort of pitfalls, with loose boards placed over them, baited with fish or flesh: but when Sables grow scarce, the hunters trace them to their holes through the new-fallen snow, place nets at their entrances, and frequently

described by Dr. Richardson in his 'Fauna Boreali-Americana;'—the mouth, armed with long sharp teeth, is cleft far past the eyes, which are close to the very short pointed snout. The gill-openings, having the form of irregular slits, and large enough to permit the three branchiæ to be seen, are under the very small pectorals. The skin is soft, slimy, loose, and slightly granular in appearance. The extensibility of the jaws and throat is extraordinary, being even greater than that exhibited by the serpent tribe. Only two examples of the genus are known to have been taken, and, with the exception of dimensions, they realise many of the popular accounts of the great American sea-serpent. They are voracious fish, with a capacious stomach and short straight gut. One of the specimens had recently before its capture swallowed a fish longer than its own body, and the other had apparently exhausted itself in vain attempts to gorge a sea-perch thicker than itself. The individual described by Dr. Harwood (*Sarcophagus angulicaudus*), measuring four feet and a half in length, was captured in the entrance of Davis' Strait, by Capt. Sawyer, of the ship Harmony; the other (*Sarcophagus chordatus*), which was six feet long, was taken by Capt. Hector Coffin, about midway between the Labrador coast and Ireland, in the fifty-second parallel of latitude.

SAGOIN, or SQUIRREL MONKEY. The little animals belonging to this group are extremely light, active, and graceful in their movements, as well as elegant in their forms. They use their tail as a protection against cold, to which they are acutely sensitive. Their food chiefly consists of insects, eggs, and small birds.

SAJOU. A lively and active Monkey, of the genus *Cebus*; docile, but somewhat capricious. It has a prehensile tail, though it is not so delicate an organ of touch as in some other species. In their native forests they live in troops; feeding on fruits, grain, eggs, &c. [See MONKEYS.]

SAKI. A monkey belonging to the genus *Pithecia*, and called the Fox-tailed Monkey. These animals usually reside in the outskirts of forests, in small societies of ten or twelve individuals. Upon the slightest provocation they display a morose and savage temper; and, like the Howlers, they utter loud cries before sunrise and after sunset.

SALAMANDER. (*Salamandra.*) A genus of reptiles, closely allied to the frog, but differing from it in having an elongated body, a long tail, and four feet of equal length. They have the general form of lizards, but have all the characters of *Batrachians*, and have therefore been removed from the genus *Lacerta*, where Linnæus had placed them. The head is flattened; the jaws are armed with numerous small teeth; and there are two longitudinal rows on the palate. The young are born in the shape of tadpoles, are provided with gills, and have their tails vertically compressed. In the adult state they respire in the same manner as frogs and tortoises. The terrestrial Salamanders inhabit the water only during the tadpole state, or during the time that they are laying their eggs: they are distinguished by a rounded tail. The aquatic species remain during life in water, and are enabled to swim with considerable brisknesses

SALAMANDER.—(SALAMANDRA MAPULATA.)

by means of their compressed tails. They possess the most extraordinary powers of reproducing their parts; renewing, many times successively (according to the experiments of Spallanzani), the same member after it had been severed, and this with all its bones, muscles, vessels, &c. Another faculty, not less singular, consists (as shown by Dufoy) in their recovering after having been long frozen up in ice.

The COMMON SALAMANDER of Europe (*Salamandra vulgaris*) is a sluggish, clumsy reptile, six or eight inches long, of a blackish colour, with large, irregular, rounded spots of bright yellow. It is found in moist places, under stones or the roots of trees near the borders of springs, in deep woods, &c., and passes its life under ground, except during rains or at night, when it comes out, but does not wander far from its place of residence. It lives on slugs, insects, worms, &c.; does not appear to shun the presence of man or other animals; is oviparous; and exudes a noxious and acrid secretion in great abundance. Among the most absurdly ignorant of all popular superstitions, was that which ascribed to this poor reptile the power of subsisting in the fire; and how the idea could ever have originated appears truly wonderful, when all the habits and habits of the animal are connected with cold and moisture. There are a variety of species found both in North and South America.

SALLOW [MOTHS]. A name given by collectors to Moths of the genus *Xanthia*.

SALMO. A genus of Malacopterygious fishes, containing many species, most of which are highly prized as food; among these we may specify the

cond dorsal entirely adipose: they
ally very muscular, and possessed
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on Salmon (*Salmo salar*) is chiefly
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ALMON.—(SALMO SALAR.)

ain seasons to deposit its spawn in
ly beds of rivers, at a great dis-
a their mouths. It grows to the
three, four, or five feet, and is usu-
tem or twelve pounds when taken;
-grown Salmon averages a weight
n twenty and thirty pounds.
specimens, however, are now and
ured: sometimes weighing forty
unds; and it is a fact that, in
almon was exhibited in a fish-
shop in London (Mr. Grove's of
et), weighing eighty-three pounds.
male fish, of extraordinary thick-
l colour, and excellent quality.
of the Salmon is elongated and
; the colour a dark blue, dotted
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ade of pink below; the head of
size, and the upper jaw rather
. Almost all parts of the mouth
ed with pointed teeth. The usual
ich the Salmon leaves the sea, is
n; it remains in the rivers during
r; and returns to the sea after
posited the spawn, in the spring.

Fishes, much information is given, both with respect to the habits of those which resort to our rivers and the various modes of taking them. "The adult fish having spawned, being out of condition, and unfit for food, are considered as unclean fish. They are usually called *Kelts*; the male fish is also called a *Kipper*, the female a *Shedder*, or *Baggit*. With the floods of the end of winter and the commencement of spring they descend the river from pool to pool; and ultimately gain the sea, where they quickly recover their condition, to ascend again in autumn for the same purpose as before; but always remaining for a time in the brackish water of the tide-way before making either decided change; obtaining, it has been said, a release from certain parasitic animals, either external or internal, by each seasonal change; those of the salt water being destroyed by contact with the fresh, and *vice versâ*." "The Salmon fry at first keep in the slack water by the sides of the river; after a time, as they become stronger, they go more towards the mid-stream; and when the water is increased by rain, they move gradually down the river. On meeting the tide, they remain for two or three days in that part where the water becomes a little brackish from the mixture of salt water, till they are inured to the change, when they go off to the sea all at once. There, their growth appears to be very rapid, and many return to the brackish water, increased in size in proportion to the time they have been absent." "It has been a constantly received opinion, that all the young fish after their first visit to the sea return to the rivers in which they had been bred; and numbers of marked fish are stated to have been retaken in their native rivers: but it is equally certain that some have been taken in other rivers not far off. The difficulty of supposing that they could find

Salmonoid fish, called the *Parr*, is, as many naturalists had suspected, the young of the Salmon.

How far the legitimate province of a writer on zoology may extend, when describing the habits and instincts of animals, we are unable exactly to define, or what bounds are to be prescribed to his fancy (if he happen to possess any); but we would rather incur the charge of supererogation, justly tounded or not, than forego the strong inclination we feel for the adoption of an apposite passage — particularly one so graphic and spirited as the following description of the capture of a salmon, from the vigorous pen of the well-known Christopher North:— "She is a salmon, therefore to be viewed — she is a salmon, therefore to be won; but shy, timid, capricious, headstrong, now wrathful, and now full of fear: the cruel artist has hooked her, and in spite of all her struggling, will bring her to the gasp at last." —"But the salmon has grown sulky, and must be made to spring to the plunging stone. There, suddenly instinct with new passion, she shoots out of the foam like a bar of silver bullion; and relapsing into the flood is in another moment at the very head of the waterfall! Give her the butt — give her the butt — or she is gone for ever with the thunder into ten fathoms deep! Now comes the trial of your tackle — and when was Phin ever known to fail at the edge of cliff or cataract? Her snout is southwards — right up to the middle of the hill-born river, as if she would seek its very source where she was spawned. She still swims swift and strong, and the deep, and the line goes steady. There is yet an hour's play in her dorsal fin — danger in the flap of her tail — and yet may her silver shoulder shatter the gut against a rock." —"What another mad leap! yet another sullen plunge! Ha, ha, my beauty! Methinks we could fain fond and kiss thy silver side, languidly lying afloat on the foam, as if all further resistance now were vain, and gracefully thou wert surrendering thyself to death! No — she

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ALBUS. This fish, which bears e of *Attihawmeg* by the native many of whom mainly subsist upon inhabitant of all the interior lakes ca, from Erie to the Arctic Sea. It o the sub-genus *Coregonus*, family lea. The Attihawmeg has some nce to the Herring in the structure ws and gill-covers, and, like that ies speedily when taken out of the It measures about twenty inches in its usual weight is from two to three nd when very fat it attains to seven pounds, and occasionally more; but rge fish are confined to particular . The form of the Attihawmeg is ore or less gibbous before the dorsal a slightly-tapering tail inclining upwards. The body is compressed; r surface of the head is smooth and e eyes are large, and situated a little n a diameter of the orbit from the e snout, which projects a little from mouth. The jaws and tongue are d with a few teeth, which are too o be readily seen by the naked eye, slender to be very perceptible to the the palate and vomer are quite The scales are about half an inch eter; they have a bright pearly d are thin and very deciduous. The fin is forked, and spreads widely. our of the Attihawmeg, in the shade, ish-gray on the back, lighter on the d white on the belly; but when l light, it assumes a nacry and iri- pearly lustre.

tain lakes, and in some seasons, this loaded with fat, particularly about ulders, where it produces a hump; gh it is rich and fat, instead of pro- atiety it daily becomes more agree- the palate; and it is confidently , that, though deprived of bread and ise, one may live wholly upon this months, or even years, without tiring. e spawning season its flesh becomes d rather watery, but not unwhole- nd it may be improved by being the open air for a month or six at least it is allowed by the ichthyo- of the fur countries to be richer, and altogether more agreeable to alates. It is a gregarious fish, and o different parts of a lake according season of the year, its movements e all probability regulated by its of food. In winter the fisheries are ly established in deep water, remote e shore; after the spawning period, -fishery, as it is termed, is more pro- in shallow bays and on banks near re. The Attihawmeg feeds on soft nd small shelly mollusca; and it is of observation that it differs from r known *Coregoni* in the extraordi- ishness of its stomach, which has ought to bear some resemblance to ed of a fowl.

SALMON TROUT. (*Salmo Trutta.*) This fish, which in Scotland is called the Sea Trout, is next in value to the Salmon, and in its habits exceedingly similar. It has a large smooth head, of a dusky colour, with a gloss of blue and green; the back is of the same colour, except that it becomes fainter towards the lateral line: the sides, as far as the lateral line, are marked with large, irregular-shaped spots of black; and the abdomen is white. Like the Salmon, this fish migrates to and from the sea, and consequently, when it has entered the rivers in order to deposit its roe, it is occasionally found in lakes and streams at a great distance from the sea. They continue in season during the whole summer; and may be angled for either in the mornings or evenings. They are usually from about two to four pounds weight; and great quantities are sent from Scotland to the London market. The flesh is much esteemed, but it ought to be dressed as soon as possible.

The 'Fordwich Trout' of Izaak Walton, as we are informed by Mr. Yarrell, is the Salmon Trout; "and its character for affording 'rare good meat,' besides the circumstance of its being really an excellent fish, second only to the Salmon, was greatly enhanced, no doubt, by the opportunity of eating it very fresh. Fordwich is about two miles east-north-east of Canterbury. The stream called the Stour was formerly very considerable; it communicates with the sea opposite the back of the Isle of Sheppy, and from Fordwich, one branch, going eastward, again enters the sea at Sandwich. The ancient right to the fishery at Fordwich was enjoyed jointly by two religious establishments: it is now vested in six or seven individuals, who receive a consideration for their several interests. It was formerly the custom to visit the nets at Fordwich every morning to purchase the fish caught during the night. I have seen specimens of the Salmon Trout from the Sandwich river exposed for sale in the fishmongers' shops at Ramsgate, during the season for visiting that watering-place: and the Salmon Trout is also occasionally taken in the Medway by fishermen who work long nets for smelts during the autumn and winter." The same writer also says, "This fish is the White Trout of Devonshire, Wales, and Ireland; it is found in the Severn, in the rivers of Cornwall, and is plentiful in the Esk and the Eden, which communicate with the Solway, where it is called Sea Trout." "Great quantities of it are sent to the London market; those from Perth, Dundee, Montrose, and Aberdeen appear, from their comparative depth of body, to be better fed, are higher in colour, and are considered to be finer in flavour than from some other localities."

SALPINGIDÆ. A family of Coleopterous insects, small in extent, distinguished by having the head produced in front into a flattened rostrum; the antennæ inserted in front of the eyes; the body generally oval, or oblong and depressed. The species are of small size, sometimes brightly coloured, and

are found either beneath the bark of trees or in flowers.

SALTATORES, or SALTIGRADES. A tribe of Spiders, so named in consequence of their legs being fitted rather for *leaping* than for running. Many species of this group construct, amongst leaves, under stones, &c., silken nests, open at each end, into which they retire; but if menaced with danger, they make a precipitate retreat. One species (*Salticus scenicus*) is very commonly seen in summer upon walls and windows exposed to the sun, moving about in short leaps. When it discovers a small fly or a gnat, it cautiously approaches till within leaping distance, when it suddenly darts upon it; not fearing to take even a perpendicular leap, because it always at the same time suspends itself by a thread, which it winds off as it advances. By this thread it can also suspend itself in the air, and is enabled to mount up again to the spot from which it leaped.

SALTATORIA. A section of Orthopterous insects, corresponding with the Linnæan genus *Gryllus*, and consisting of all those species which have the four anterior legs simple and short, and the two hind legs long, and formed for leaping. The body is generally compressed; the tarsi vary in the number of their joints, as well as the antennæ, which are also greatly variable in length, being in some species several times longer than the body. The males are enabled to make a peculiar shrill noise, which is produced in different ways in different groups; being in some caused by the friction of the posterior femora against the wing-covers, and in the others by the friction of the strong veins enclosing a talc-like spot at the base of the wing-covers. In general, the females deposit their eggs by the assistance of a horny ovipositor, in the earth; and the species are almost exclusively herbivorous. [See CRICKETS and LOCUSTS.]

SANDERLING. (*Arenaria vulgaris.*) A small wading bird which frequents many of our shores, and is a pretty general inhabitant of the globe. It is about eight inches in length. Its autumnal and winter plumage differs considerably from that which it assumes in spring: the face, throat, neck, and the whole of the under parts of the body, being of a pure white in winter; whereas in spring the face and top of the head are marked with large black spots, and the feathers are bordered with red; and the neck, breast, and upper parts of the sides, are gray-red, with the middle of each feather spotted with black, and their tips whitish: the back and scapulars are deep rufous, with large black spots, and the whole of the feathers edged and tipped with white: beak, irides, and feet, black. It feeds on small marine insects; breeds in the north; and is sometimes called the Ox-bird.

SANDPIPER. (*Totanus.*) This name is applied to different species of wading birds of the genus *Tringa*, but properly restricted to the sub-genus *Totanus*. The Sandpipers chiefly frequent saline marshes and the sea-shore; but they are also found on the banks of inland lakes and rivers, and o[illegible] damp meadows. They fly in flock[illegible] perform periodical migrations in large[illegible] Their food consists of worms, crustac[illegible] small mollusca, and they also occas[illegible] subsist upon small fish and their fry. [illegible] have the tip of the beak depressed, [illegible] nasal furrow very long, as in the G[illegible] but the mandibles in general are not [illegible] than the head; their toes are not pa[illegible] at the base, and the back toe hardly [illegible] to the ground. Many of the spec[illegible] very widely diffused, and several are [illegible] more or less regularly, on the British [illegible]

The COMMON SANDPIPER. (*Totan[illegible] poleucos.*) This species, which is le[illegible] eight inches long, visits England [illegible] spring, and leaves it in the autum[illegible] the upper parts of the body are [illegible] glossed with an olive hue, and mark[illegible] a blackish ray in the direction of the [illegible] the feathers of the wings and back are [illegible] versely streaked with narrow zigzag [illegible] bands; the throat, breast, and unde[illegible] are pure white, the sides of the m[illegible] breast being varied with streaks of [illegible] the middle tail feathers are marke[illegible] transverse dusky lines, and the outer [illegible] each side white with brown bar[illegible] greenish ash. The nest of this bird i[illegible] posed of moss and dry leaves, and ge[illegible] placed in a hole on a river's bank; [illegible] eggs, usually five in number, are of [illegible] dish-green, with dark spots mostly [illegible] larger end. When disturbed they [illegible] clear piping note, by which they are [illegible] recognized.

There are several species of these [illegible] differing but slightly from each othe[illegible] we may remark of them, generally [illegible] their legs are destitute of feathers fo[illegible] distance above the knee, and the t[illegible] short and incapable of grasping; hen[illegible] do not perch, but frequent the bor[illegible] ponds, rivers, and marshes, especially [illegible] vicinity of the ocean, and are ofte[illegible] rapidly coursing along the strand, fol[illegible] the flux and reflux of the waves. [illegible] wings are long, and their flight power[illegible]

SAND-WASP. (*Ammophila.*) A [illegible] of Hymenopterous insects, which, to[illegible] with several other genera, form a grou[illegible] from their peculiar habits are terme[illegible] *sores*, or diggers, and commonly kn[illegible]

SAND-WASP.—(AMMOPHILA ARENAR[illegible]

Sand and Wood Wasps. In gener[illegible] females excavate cells in the ground, [illegible] posts, timbers, &c.; in which they dep[illegible] together with their eggs,—various [illegible]

nsects, and (in some species) even which are destined for the support ir progeny when hatched. It happens insects composing this store are e first stung to death; but more y they are only slightly stung, and illed by the larvæ when they come n their eggs,—being in this manner powerless, whilst their bodies are l from decomposing. The antennæ nt thirteen joints, attenuated ex- and mostly recurved; mandibles dentate at the apex; labium short, ligula short and trilobed; ocelli nsect; wings alike in both sexes; spiny; female armed with a sting. d-Wasp inhabits sunny banks in nations, running among grass, &c. at activity, and continually vi- e antennæ and wings. It feeds on

OU. A small species of Monkey, us *Cebus*. [See MONKEYS.]

OPHORUS. A genus of Grallato- closely allied to the Pewits, which eir name from the wattles or fleshy es about the neck. The species ORUS PECTORALIS, or BLACK- D PEWIT, inhabits South Australia, oria's Land, &c., its favourite lo- ing open sterile downs, thinly co- th vegetation, and occasionally to ith on the grassy flats in the neigh- of rivers. It trips very quickly round, much after the manner of Pewits, and when flushed generally in a straight line, very near the Crown of the head, line running angle of the mouth beneath the down the sides of the neck, and a ecent-shaped band across the breast, ; line from the eye to near the hin, throat, flanks, abdomen, upper r tail coverts, white; back light rimaries brownish black; scapula- ower part of the back bronzy brown, ito black towards the tip of each nd tipped with white; tail white, ear the tip by a broad irregular lack; bill primrose yellow, the tip ar; naked parts of the thigh and k pink; tarsi and toes blackish e latter inclining to pink-red.

AMPHUS, or KING OF THE RES. This powerful species of the e family is about two feet and a length, and upwards of five feet e expanded wings. The naked the head and neck is brilliantly ; the beak reddish, with a shade of ore bright orange, prolonged be- e nostrils into a comb, loose in tex- falling on each side of the bill e head is erect. The back of the overed with a short blackish down, side of the head is purplish black. circle surrounds the eye; and on behind the eye are several *broad* wrinkles, whence *rises a thick fold g obliquely downwards along the on the bright red upper part of the* neck the colour gradually lessens in intensity, fading into orange and yellow lower down. Round the bottom of the neck is a broad ruff of soft, downy, ash-gray feathers: the back and tail-coverts bright fawn;

KING OF THE VULTURES.
(SARCORAMPHUS PAPA.)

greater wing-coverts and tail-feathers glossy black; legs and claws dusky, or dirty yellow.

In the central parts of America the *Sarcoramphus papa* is frequently to be seen, alone or in pairs, perched on the highest trees; though it is said that considerable flocks may be occasionally met with. The expanse and strength of wing of the King Vulture enables it to reach a lofty height, where its piercing sight brings under its observation a wide tract of country, while its exquisite sense of smell detects the effluvia arising from putrid fish which during the summer perish in the lakes. The story that the other vultures stand patiently by till this, their monarch, has finished his repast, may be accounted for by the superior strength and courage of this species; and it is, in fact, confirmed by the testimony of many travellers; among others, by Mr. Edwards, in his 'Voyage up the Amazon;' who observes—"If a King Vulture makes its appearance where a number of the other species are collected about carrion, the latter instinctively give way and stand meekly around while their sovereign leisurely gorges himself. These birds are not very common upon the Amazon, and we never had an opportunity of shooting them, but several times we observed them circling in pairs over the forest. Senhor Henriquez informed us at the Barra that they were not unfrequently taken alive, particularly if a putrid snake, of which they are fond, be exposed to them. A noose is arranged to fall over their heads, and the caught bird is transformed from a wild marauder into a peaceable citizen. At Para they are highly valued. We saw a pair in perfect plumage which were presented to Mr. Norris, and felt nothing of the disgust inspired by the other common species. Their bare necks were beautifully marked with red and black, orange and yellow, and were surrounded near the base by a ruffle of feathers. Their breasts were white, and the general colour

we are so much indebted, observes, that although this species has been long known to ornithologists, and is familiar to the colonists of New South Wales, its habits have never been brought before the scientific world; and he very naturally congratulates himself on being the first to place them on record. One point to which he more particularly alludes—a point, as he truly says, "of no ordinary interest, both to the naturalist and the general admirer of nature—is the formation of a bower-like structure by this bird for the purpose of a playing ground or hall of assembly,—a circumstance in its economy which adds another to the many anomalies connected with the fauna of Australia.' It appears to be altogether granivorous and frugivorous. "Independently of numerous berry-bearing plants and shrubs, the brushes it inhabits are studded with enormous fig-trees, some of them towering to the height of two hundred feet; among the lofty branches of these giants of the forest, the Satin Bower-bird and several species of Pigeons find in the small wild fig, with which the branches are loaded, an abundant supply of a favourite food: this species also commits considerable depredation on any ripening corn near the localities it frequents." The extraordinary bower-like structures above alluded to are usually placed under the shelter of the branches of some overhanging tree in the most retired part of the forest: "the base consists of an extensive and rather convex platform of sticks firmly interwoven, on the centre of which the bower itself is built: this, like the platform on which it is placed and with which it is interwoven, is formed of sticks and twigs, but of a more slender and flexible description, the tips of the twigs being so arranged as to curve inwards and nearly meet at the top: in the interior of the bower the materials are so placed that the forks of the twigs are always presented outwards, by which arrangement not the slightest obstruction is offered to the passage of the birds. For what purpose these curious bowers are made is not yet, perhaps

with yellow tip; legs
white. The female h
the upper surface gray
tail dark sulphur bro
much lighter, and yel
having a crescent-sha
brown near the extrem
liquid call peculiar to
frequently utter a har
tural note, indicative
pleasure.

The Spotted Bow
dera maculata.) Th
from whom we deriv
given in the preceding
this species is as exclu
of the interior of the
Bower-bird is of the
mountain-ranges and
peculiarly interesting as
bower, even more extr
of the latter. But to d
must borrow the auth
"They are considerab
avenue-like than those
bird, being in many in
length. They are outw
and beautifully lined
disposed that their hea
decorations are very pe
bivalve shells, crania
and other bones. Evid
dications of design are
the whole of the bow
formed by this species,
manner in which the
within the bower, app
grasses with which it is
their places; these sta
mouth of the run on ea
little paths, while the
decorative materials, h
placed in a heap before
avenue, this arrangeme
both ends. . . . I freq
structures at a conside
the rivers, from the be

runs, like those of the Satin
, formed the rendezvous of many
; for, after secreting myself for
ace of time near one of them, I
males which I had previously
ng through the avenue."
tled Bower-bird has the crown of
ear-coverts, and throat, of a rich
h feather surrounded with a nar-
black; a beautiful band of elon-
pink feathers crosses the back of
forming a broad, fan-like, occi-
; all the upper surface, wings,
f a deep brown; every feather of
rump, scapularies, and secon-
ed with a large round spot of rich
aries slightly tipped with white;
ll-feathers terminated with buffy
thers of the flanks marked with
verse, zigzag lines of light brown;
et dusky brown; bare skin at the
the mouth thick, prominent, and
lesh-colour.

US. A genus of Diurnal Lepi-
so called HIPPARCHIA; it contains
itish species: amongst these is

GALATHEA; or MARBLE BUTTER-
a delicate and rather singular spe-
tterfly, is known by its yellowish
spotted wings, but though pretty
is so decidedly local and limited
cular habitat as to be very rarely
l in many places. The anterior
a series of yellowish dots parallel
nder margin above, and the under
rly similar, with a small ocellus
; the posterior wings have also
marginal dots or lunules, with a
broad patch in the centre, and
the base. Body black above,
beneath; antennæ black, with
s, and tips reddish. Caterpillar
n, with obscure lines on the back
head rather brown. It feeds on
ll grass. Chrysalis of yellowish
ee HIPPARCHIA.]

, or SAURIANS. The name of
f Reptiles, including all those
e the Crocodile and Lizard, are
th scales and have four legs. The
stic and remarkable specimens of
pptiles are now extinct, but their
ins, immense in size and wonder-
appear, afford incontestable evi-
eir similarity in structure to the
ittle Lizard of the present day.
ity in the habits of the existing
very considerable; some being
h aquatic; others strictly terres-
e others are essentially arboreal.
r part feed on animal substances;
me preferring flesh, and others
mall animals; while some are
sectivorous, and a few are her-
They are all furnished with teeth,
of a simple conical form, and
ather for securing and tearing
than for masticating it; their
enerally furnished with claws,
are all a trifle more or less strong.
ly very thick at the base. A
few species, exceptions to the general character, have only two legs. [The distinguishing characteristics of different Saurian Reptiles will be found under the words CROCODILE, ALLIGATOR, CHAMELEON, AGAMA, LIZARD, IGUANA, GECKO, PLESIOSAURUS, ICHTHYOSAURUS, &c.]

SAWFISH. (*Pristis antiquorum.*) A fish belonging to the family of the *Squalidæ*, or Shark tribe; and which receives its name from the extension of its snout into a long flat blade, furnished with a row of sharp spines, on each side, so as to resemble a large toothed saw. With this formidable weapon the Sawfish attacks the largest Whales, and

SAWFISH.—(PRISTIS ANTIQUORUM.)

inflicts very severe wounds. It sometimes attains the length of twelve or even fifteen feet. The back is ash-coloured, and the belly white; the head is cordiform, and flattened, the mouth is placed far below the end of the snout; and the lips are rough and sharp like a file, supplying the place of teeth. This fish is very widely distributed, being found in the arctic, antarctic, and tropical seas; but it seldom approaches the shore.

SAW-FLY. [See TENTHREDINIDÆ.]

SAXICAVA. A genus of Conchiferous Molluscs, (family *Lithophagidæ*); often found in the hollows of rocks, in cavities on the backs of oysters, and among the roots of sea-weed, &c. The foot of the animal is thin and pointed; and in its habits it appears to resemble the *Pholas*, masses of rock being to be seen on different parts of the coast of England, which are pierced with innumerable small holes, the entrance to the habitations of these animals. The shell is transverse, irregular, generally oblong, and gaping externally; teeth and bosses obsolete or indistinct.

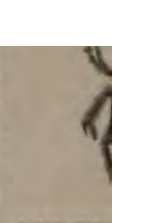
SCALARIA, or WENTLE TRAP. A genus of Pectinibranchiate Gasteropodous Molluscs, allied to the Periwinkles (*Turbo*), but distinguished from them by the turreted spire being covered with longitudinal, elevated, rather sharp ribs, and the mouth being encircled by a varix. The finest spe-

SCALARIA PRETIOSA

cies (*Scalaria pretiosa*) was long famous for the rarity and high prices given for a single specimen. It is now found to be not an uncommon shell in the Eastern seas. It is known by the whorls being separated from each other.

like a scale or shield, convex above, flat or concave below, provided with six very delicate feet, which sometimes, chiefly when the female has grown old, merge into the substance of the body. Anteriorly, at about the third part of the length of the insect, is situated a short or long rostrum on the under side, which it inserts into the epidermis of plants, and sucks out their juices. After pairing, when the eggs begin to develop themselves, the female dies, and her body serves as a protection to her posterity, by covering the eggs till the young are hatched, when they crawl away. Almost all sorts of plants suffer from the attacks of some species or other of Scale Insects, but chiefly in warm weather, and more especially at all times are those affected which are reared and kept in hot-houses. The Scale Insects are much more difficult to destroy than the Aphides; as they do not die from the effects of tobacco: the best remedy is to brush off the insects from the twigs and stems, and to wipe them off with a cloth or sponge from the leaves of more tender plants; and it is advisable to cleanse plants in pots at a distance from the greenhouse, as the insects are apt to creep up again and renew their depredations. The trees mostly infested with them are the peach and nectarine, the plum and damson, the wild chestnut and the vine. [See COCCUS.]

SCANSORES. The name of an order of birds, whose feet are peculiarly adapted for climbing. It comprehends the families of *Psittacidæ*, or Parrots; *Rhamphastidæ*, *Picidæ*, or Woodpeckers; and *Cuculidæ*, or Cuckoos. That which particularly distinguishes this order is the power of turning one of the front toes backwards, so as to oppose two hind toes to the two front ones. In their food, habits, outward appearance, and structure, the above-named families are very dissimilar; and therefore no general statement will be applicable to all of them: but it will be seen that the form of their feet, which gives them great power of prehension, and thus enables them to cling



SACRED BEETL

to its possessors
crementitious m
their eggs; whe
by the first na
balls are at first
degrees, and d
along, become r
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the insects occ
when they find
along; probabl
equilibrium. S
inch and a half
and in rolling t
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turned from th
have for their o
in holes, which
dug for their re
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hatched, feed.
beetles have the
own balls, as th
longing to anot
their own; and,
veral of them
the same ball,
part of the day.
"The type of
'Sacred Beetle'
so many model
discovered, occa
sarcophagi, and

, long hind legs, clothed with hairs, e posterior tarsi obliquely inserted; d thorax unarmed, and elytra with rgins not sinuated."

RUS. A genus of Acanthopterygious many species of which are found in pical seas. [See PARROT-FISH.]

ENIDÆ. A family of fishes, of which are several subgenera. The general ers are,—the head inflated, and sup- by cavernous bones; the body com- and broad; only one dorsal fin, but ifid, and so deeply divided at the that it seems to form two, and the t is much longer than the spinous; l short, the pre-operculum toothed,

MAIGRE.—(SCIÆNA AQUILA.)

e operculum divided into points at its ity; seven arches in the gills. They le the Perches, except that they have h in the palate.—The *Sciænidæ* with n seven gill-rays, and the lateral line pted, form several genera of small hes, generally finely coloured, and uished by the armature of their heads. æna Aquila, or Maigre, may be given example. It has occasionally been n the English coast.

QUE, or SKINK. (*Scincus.*) The ven to a family of lizard-like rep- which there appears to be a gradual on from the form of the Lizards to the Serpents. They are all natives e climates; and one species, common ia, Northern Africa, &c., was long t repute on account of its supposed nal virtues. They are recognized by artness of their feet, the non-exten- of the tongue, and the tile-like scales cover the whole body and tail, pre- almost the appearance of a coat of

SOR-BILL. (*Rhynchops.*) A genus ipede birds closely allied to the Terns, ly distinguished by the singular bill, is compressed like a knife, and has er mandible longer than the upper, cken off (as it were) at the tip. At o species are known; one of these is to the New World (*R. nigra*), while ther (*R. orientalis*) is found in the n hemisphere.

ir article "Rhynchops," we gave some ting extracts from Wilson's Ornitho- specting the habits of the species found th America. We may here add a short t of the same birds seen in more south- latudes, by Mr. Darwin, *and described most accurate and intelligent observer Journal.' He is in the vicinity of the* Rio Parana, and thus writes:—"I here saw a very extraordinary bird, called the Scissor-beak (*Rhynchops nigra*). It has short legs, web feet, extremely long pointed wings, and is of about the size of a tern. The beak is

SCISSOR-BILL.—(RHYNCHOPS NIGRA.)

flattened laterally, that is, in a plane at right angles to that of a spoonbill or duck. It is as flat and elastic as an ivory paper-cutter, and the lower mandible, differently from every other bird, is an inch and a half longer than the upper. I will here detail all I know of the habits of the Scissor-beak. It is found both on the east and west coasts, between lat. 30° and 45°, and frequents either salt or fresh water. The specimen now at the Zoological Society was shot at a lake near Maldonado, from which the water had been nearly drained, and which, in consequence, swarmed with small fry. I there saw several of these birds, generally in small flocks, flying backwards and forwards, close to the surface of the lake. They kept their bills wide open, and with the lower mandible half buried in the water. Thus skimming the surface, they ploughed it in their course: the water was quite smooth, and it formed a most curious spectacle to behold a flock, each bird leaving its narrow wake on the mirror-like surface. In their flight they frequently twist about with extreme rapidity, and so dexterously manage, that with their projecting lower mandible they plough up small fish, which are secured by the upper half of their scissor-like bills. This fact I repeatedly saw, as, like swallows, they continued to fly backwards and forwards, close before me. Occasionally when leaving the surface of the water their flight was wild, irregular, and rapid; they then also uttered loud harsh cries. When these birds are fishing, the length of the primary feathers of the wings is seen to be quite necessary, in order to keep the latter dry. When thus employed, their forms resemble the symbol by which many artists represent marine birds. The tail is much used in steering their irregular course.

"These birds are common far inland along the course of the Rio Parana; it is said they remain during the whole year, and breed in the marshes. During the day they rest in flocks on the grassy plains, at some distance from the water. Being at anchor, as I have said, in one of the deep creeks between the islands of the Parana, as the evening drew to a close, one of these Scissor-beaks sud-

the grassy plains near the Parana; and every evening they took flight direct to seaward. From these facts, I suspect that the Rhyncops generally fishes by night, at which time many of the lower animals come most abundantly to the surface. M. Lesson states that he has seen these birds opening the shells of the *mactræ*, buried in the sand-banks on the coast of Chile."

SCISSOR-TAIL. (*Milvulus forficatus.*) "A bird with a forked tail, terminated by two long feathers, and named by the Spaniards *Scissor-tail*, is very common near Buenos Ayres. It belongs to the family *Laniidæ* or Butcher-birds. It commonly sits on a branch of the *ombu* tree, near the house, and thence takes a short flight in pursuit of insects, and returns to the same spot. When on the wing, it presents in its manner of flight and general appearance a caricature-likeness of the Common Swallow. It has the power in the air of turning very shortly, and in so doing, opens and shuts its tail sometimes in a horizontal or lateral, and sometimes in a vertical direction, just like a pair of scissors. In structure this bird is a true tyrant-flycatcher, although in its habits certainly allied to the Swallows."—*Darwin.*

SCIURIDÆ. The name given to the Squirrel tribe.

SCIURUS. [See SQUIRREL.]

SCOLIADÆ. A family of Hymenopterous insects, distinguished by having the collar laterally extending to the base of the wings; the legs short and robust, the tibiæ being thick, spinose, or denticulate. The antennæ are generally short, thick, and more or less serrated: the abdomen is elongate-ovate, and attached by a short peduncle: both sexes are winged; and the body is often very hirsute. The greater part of the species are exotic, and some are of a very large size. They abound in the very hottest situations, and make deep burrows in sand banks; and they are said to be particularly fond of revelling in strong-scented flowers,

admirably adapted t
is for the purpose
SNIPE; WOODCOCK
RUFF; &c.]

SCOLOPENDRA.
of the class *Myriap*
southern parts of Eu
portions of the glob
dreaded for their ven
mandibles are term
which is pierced fo
venomous fluid. T
body long, slender,
tected by coriaceous
fast, and shun the li
part under logs of w
of decayed trees. [S

SCOLYTIDÆ. A
insects, the type of w
destructor. The bod
convex and rounde
globular; and the a
joint elongated, and
a more or less solid
from Mr. Westwood,
"the *Scolytus destruc*
in this country, ann
number of elm tree
of London; and t
spreading into the
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it is, or ought to be,
sures for stopping th
and public gardens
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tacks of these insect
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mary cause of the
trees were not previ
way or other, and th
nidus for the insect,
servations of Messrs.
it, however, appears
instance, both the m
attack the trees for t
food, burrowing into
the trees into a stat

sudden change in the temperature nerally occurs in the early part of rings out great numbers of insects, eir winter quarters, to enjoy the and the ardent heat which are al to their pastures. While a con- um is heard among the branches of m, from thousands of bees and flies, hither by the fragrance of the burst- ; swarms of little beetles of various me forth to try their wings, and,

DESTRUCTOR AND LARVA, WITH A OF WOOD TO SHOW THE RAVAGES OF THE INSECT.

uncertain and heavy flight, launch air. Among these beetles there are f a dull red or fox colour, nearly eal in form, tapering a very little btusely rounded at both extremities, nt one quarter of an inch in length. re seen slowly creeping upon the wooden buildings, resting on the fences, or wheeling about in the air, ry now and then suddenly alighting tree or wall, or dropping to the If we go to an old pine-tree, we cover from whence they have come, at they have been about during the riod of their lives. Here they will d creeping out of thousands of small oles which they have made through k for their escape. Upon raising a the bark, already loosened by the ining of these insects, we find it with holes in every direction, and e surface of the wood will be seen to en gnawed by these little miners. enjoying themselves abroad for a s, they pair, and begin to lay their They gnaw little holes here and there the rough bark of the trunk and ep their eggs therein, and, after this is finished, they become exhausted . In the autumn the grubs hatched ese eggs will be found fully grown. ey eat the soft inner substance of the ees through it in various directions purpose; and they gnaw a passage rface, for their escape after they have completed their transformations. Their depredations interrupt the descent of the sap; the bark becomes loosened from the wood, and the tree decays.

SCOMBERESOX. A fish, called also the Mackerel Pike, or Saury Pike, found in the Mediterranean, and remarkable for its long, beak-like jaws. They are gregarious fishes; and are followed and preyed upon by Porpoises, and also by the Tunny and other large members of the Mackerel family.

SCOMBERIDÆ. A family of Acanthopterygious fishes, of which the genus *Scomber*, or Mackerel, is the type. They are characterized by having a smooth body covered with small scales, and a very powerful tail and caudal fin; in most of the species the pectoral fins are long, narrow, and pointed. This family includes species of the greatest utility to mankind, in consequence of their abundance and their wholesomeness as food. [See MACKEREL.]

SCORPÆNA. A genus of Acanthopterygious marine fish, associating in shoals, and haunting rocky shores. The head is tuberculated and compressed laterally, but in other respects they much resemble a Perch. The species are popularly termed Hog-fish.

SCORPION. (*Scorpio.*) A genus of the class *Arachnida*, distinguished from other groups of Spiders by having the abdomen articulated, and its hinder part, or tail, terminated by a curved spur or sting, beneath the extremity of which are two small orifices, by which a venomous fluid is discharged; the stigmata are eight in number, and situated along the inferior and lateral part of the abdomen. Between the thorax and abdomen there is no distinct division; and the latter is composed of twelve segments, six of which are broad, forming the posterior part of the body, whilst the other six form the tail. The palpi are very large, resembling extended arms, and the terminal segment assumes the form of the lobster's claw, being in like manner provided with pincers. The *Scorpionidæ* inhabit the warm countries of both hemispheres, living on the ground, hiding themselves under stones or other bodies, generally amongst ruins or other dark and cool places, and sometimes taking up their abode in houses. They run with considerable swiftness, curving the tail over the back: they can turn it in all directions, and employ it as a weapon of offence or defence. With their forceps they seize wood-lice and various other ground insects, on which they feed, after having pierced them with their sting; and it is remarkable

SCORPION. (SCORPIO AFER.)

that they are particularly fond of the eggs of spiders and insects. The larger species of Scorpions, of whose malignity and venom so much has been related, are five or six inches long, but they are confined to tropical climates; those of the south of Europe are very troublesome pests also; but their sting, though painful, is seldom productive of serious mischief to man. The generality of this tribe (*Scorpio Europæus*) have six eyes; but there are some of the most formidable kind (*Scorpio afer*) which have eight. The female pays great attention to her young; carrying them upon her back for several days, at first not quitting her abode; and she afterwards takes care of them for the space of a month, by which time they are enabled to shift for themselves. Messrs Klug, Ehrenberg, Koch, and Gervais have described numerous new species of the family *Scorpionidæ*.

SCORPION-FLY. (*Panorpa.*) A winged insect thus designated on account of the remarkable conformation of the posterior extremity of the abdomen in the male, which is turned up like a Scorpion's sting. The abdomen of the female is also prolonged into an ovipositor; by which she can deposit her eggs in deep holes or crevices. The Scorpion-flies, or *Panorpidæ*, are very active, and prey upon other insects in the perfect state. There are two beautiful species of this insect; the one has silvery wings, variegated with three transverse streaks of black towards the ends; the head is black; the breast, shoulders, and feet are whitish; and the rest of the body is black. The tail, which represents a sting, has five joints, three red and two black; and the extremity of the tail is forked and reverted. This insect may be commonly seen frequenting our hedges and woods.

SCOTER. (*Oidemia.*) The Black Diver, an aquatic bird about the size of the common Duck; but the hind toe has a widish membrane, and the beak is high at the base and

BLACK SCOTER.—(OIDEMIA NIGRA.)

suddenly flattened; while the body is more round, and of a deep shining and beautiful black colour. It is very common on the shores of Lancashire, and some other maritime counties. There are at least four species of Scoter-Ducks; the whole of these go to the sea chiefly in quest of their food, and one of them (O. perspicillata) has acquired its English name of Surf-Duck, from being found for the most part on its edge.

SCREAMER. (*Palamedea.*) A genus of Wading Birds, natives of South America. The chief characteristics are, that the bill is conical, the upper mandible being hooked; and the feet are cloven, having each four toes. They are remarkable for their harsh and discordant voices, and for the sharp hard spurs with which the wings are armed at the shoulder-joint. These are very efficient weapons of defence, and enable the birds to resist the attacks of the snakes which infest the places they inhabit. One species is also remarkable for having on the top of the head a slender pointed horn, three or four inches long, which curves gently forwards, but the use of it does not appear to be known.

SCULPIN. (*Cottus octodecimspinosus.*) An Acanthopterygious fish, of the genus *Cottus*, found on the American coasts, and which has often been confounded with the European *Cottus scorpius*; it is, however, quite distinct from it, and considerably larger. The Sculpin abounds on the coasts of the United States, and is also plentiful at Newfoundland. Sir John Richardson says it is a pity that Cuvier did not retain the original specific name (*Scorpius Virginianus*) given by Willoughby, who figured it correctly; it being preferable to *octodecimspinosus*, which may lead to error, their being, in fact, twenty spines on the head. *Cottus scorpius* has exactly the same number, viz., ten on each side.

SCUTIBRANCHIATA. The name given to an order of Molluscous animals, including those Gasteropods which have the gills covered with a shell in the form of a shield. The *Haliotis* is a beautiful example [which see].

SCYDMÆNUS; SCYDMÆNIDÆ. A genus and family of Coleoptera, belonging to the *Palpatores*. They are generally of very minute size, some of the species of which are found, according to Mr. Doubleday, under planks placed upon bottoms, where they prey upon minute Thysanura, carrying them about in their jaws. Others

SCYDMÆNUS FARSATUS.

are found under stones and among moss at the roots of trees, and also in ants' nests. Our figure, copied from Mr. Stores's catalogue, gives a highly magnified representation of a species of this interesting family; but the nature of this work precludes us from entering either into generic or specific characters. We must refer to the works of

ay, of Leeds, and Dr. Schaum, of
or descriptions of the various spe-

LÆA. A genus of Gasteropodous
chiate Mollusca. In this genus the
mpressed; the foot narrow and fur-
enable it to embrace the stems of
the mouth forming a small pro-

SCYLLÆA PELAGICA.

e tentacula compressed, terminating
y from which a little point, with an
surface, can be protruded; and upon
are two pairs of membranous crests,
on their inner aspect, some pencils
hed filaments. The middle of the
is covered with a fleshy ring, armed
sharp horny laminæ. The common
found on *Fucus natans*, or gulf-
wherever this appears.

LARUS: SCYLLARIDÆ.
and family of Macrurous Decapods,
talled Crabs. They are distinguished
wide carapace, and but little ele-
its anterior border nearly straight,
enting a horizontal prolongation
dvances between the base of the
antennæ, which are foliaceous and

SCYLLARUS EQUINOXIALIS.

y wide. The buccal frame is small
jaw-feet are moderate and nearly
. There are several species, differ-
ibly from each other. The one
ed is *Scyllarus Equinoxialis*; the
which is very much depressed, and
rowed from before backwards. It
yellowish colour mingled with red,
a foot in length: its locality the

SCYTHROPS or CHANNEL-BILL. A remarkable genus of Birds, by some naturalists considered as allied to the Horn-bills, by others to the Toucans, but in reality belonging to the family of the Cuckoos. The Bill has two narrow longitudinal grooves; and the space round the eyes and nostrils is void of feathers. But one species of this genus is known, the S. Novæ-Hollandiæ or Channel-bill. It is a migratory bird in New South Wales, arriving in October, and leaving in January; it is chiefly seen in the morning and evening, sometimes in small parties of seven or eight, but more frequently in pairs. It makes a loud screaming noise when a hawk is in sight. The tail, which is nearly as long as the body, and has most of the feathers tipped with white with a black band before the tip, is occasionally displayed like a fan, and gives the bird a majestic appearance. Mr. Gould informs us that it feeds on the larger kinds of *Phasmidæ* and *Coleoptera*; but he could not ascertain whether the species was parasitic or not, like the other cuckoos.

SEA-DEVIL. The Lophius Piscatorius. [See Angler.]

SEA-EAGLE. The Erne: also the name sometimes given to the Osprey. [See Eagle.]

SEA-EGG: SEA-URCHIN. Names frequently given to different species of the family *Echinidæ*. We give a representation of the half of a beautiful species of this

ECHINUS MAMMILLATUS.

group, the above figure showing it in its natural state, covered with elegant knobbed spines, which Mr. Williams, the missionary to the South Sea Islands, tells us, in his interesting Narrative, are very often used as slate pencils in those distant islands. The

ECHINUS MAMMILLATUS WITH THE SPINES REMOVED.

accounted for by Mr. A. Adams: "In the Sooloo seas I have often witnessed the phenomenon which first gave origin to the marvellous stories of the great Sea-serpent, namely, lines of rolling porpoises, resembling a long string of buoys, oftentimes extending seventy, eighty, or a hundred yards. These constitute the so-named protuberances of the monster's back, keep in close single file, progressing rapidly along the calm surface of the water, by a succession of leaps or demi-vaults forwards, part only of their uncouth forms appearing to the eye. At the same moment of time, I have seen beautifully-banded Water-snakes, of the thickness of a man's leg, lying extended supinely along the glassy surface, or diving and swimming gracefully, with slow undulating lateral movements of their vertically-compressed bodies."

Shortly after the appearance of the first edition of "The Treasury of Natural History," the public were equally surprised and amused with a marvellous account of a marine monster which, on the authority of Capt. M'Quhae of Her Majesty's ship Daedalus, was called a *Sea Serpent*, and asserted to have been seen by him and part of his crew while sailing in lat. 24° 44′ S., long. 9° 20′ E. Had the said account appeared before the publication of our work we should have treated its existence as doubtful (although vouched for by a captain of the royal navy in a letter to the admiralty), no record of any thing like it being to be found in the works of zoologists, nor any fragment of such a skeleton having ever been seen in any part of the world. Capt. M'Quhae's Sea Serpent, however, made some considerable stir in the newspaper world; at length Professor Owen thought proper to publish a long letter in "The Times" of Nov. 14, containing a dissertation on the subject, giving his reasons for presuming that the animal was a species of seal, and grounding his disbelief as to its reality on various well-established zoological principles (but too long for quotation here), and concluding as follows: "I regard the nega-

rances on its back, its ve
and its serpent-shaped hea
absolute reliance to be pla
descriptions of this marine
it merely necessary thus
we beg to refer our read
KRAKEN in this volume."

SEA-SNIPE. [See TAT

SEA-SWALLOW. A
[which see].

SEA-UNICORN. [See

SEAL. (*Phoca.*) The
or Seal tribe, are, of all fo
miferous animals, those w
most complete adaptation
the water. The Seal (*P*
sembles a quadruped in s
a fish in others. The hea
the nose, which is broad, r
dog, with the same look of
mild and expressive phys
large whiskers, oblong n
black sparkling eyes. It
ears, but a valve exists in
can be closed at will, so a
water; the nostrils have
and the clothing of the bod
glossy hairs, very closely
skin. The body is clong
gradually tapering from
the tail. The spine is pro
muscles, which bend it w
force; and this movement
ance to the propulsion of
though in most of the fore
the Seal resembles the qu
greatly differs from all of t

. The limbs, in fact, are con-
ars and paddles. The anterior
he arm and fore-arm so short,
ore than the paw advances from
The hinder limbs are directed
so as almost to seem like a con-
f the body; the thigh and leg
rt, and the foot is formed on the
e the fore-paw,—the toes being
however, and the web folded,
not in use as a paddle, but being
when the animal is swimming.
land, or on masses of ice, the
of the Seal are particularly
ts body being forced onward by
of the fore-limbs only, and the
otion of the abdominal muscles;
lingly seldom venture from the
usually bask on the rocks; and
bed, plunge immediately to the
he water.

live in herds, more or less nume-
the shores of the sea; and upon
l coasts they bring forth and
r young, and exhibit the most
citude for their welfare. They
amed, become strongly attached
pers, recognise them at a dis-
seem to be endowed with a very
e share of intelligence. The
ir teeth and jaws shows them to
ous; and their food consists of
and sea-birds, which they are
surprise while swimming.

AL.—(PHOCA VITULINA.)

m with great rapidity and ease;
peculiar arrangement of their
, nearly similar to that which
e whale tribe, they can remain
r for a considerable time. There
pecies of these animals; some are
most every quarter of the globe,
in the frigid or temperate re-
they exist in vast numbers in
nd Spitzbergen, and on the coasts
or and Newfoundland. Their
migratory; and it is known that
r species visit the shores of Bri-
Pinnipeds are in general contented
native plains and forests; seldom
far from those situations where
produced, unless compelled by
fear; but Seals frequently shift
of abode, and are seen in my-
ling their course from one con-
another. On the northern coasts
nd they are observed to retire in
to return again in September.
eals produce two or three young
and they suckle them for six or
, generally in the cavernous re-
cks; after which they take to the sea. The young are remarkably docile: they recognise and are obedient to the voice of their dams amidst the numerous clamours of the flock, and mutually assist each other when in danger or distress. Thus early accustomed to subjection, they continue to live in society, hunt and herd together; and have a variety of cries by which they encourage or pursue, express apprehension or success. When incited by natural desire, however, their social spirit seems to forsake them; they then fight most desperately; and the victorious male always keeps a watchful eye over those females whom his prowess has secured. In some of the species there is a remarkable disproportion in the sexes; and some also are far more pugnacious than others.

The species to which the foregoing observations more particularly refer is the COMMON SEAL (*Phoca vitulina*), which is from four to five feet in length. The Greenland or HARP SEAL (*Phoca Greenlandica*) is about six feet in length, and is remarkable for the changes of colour it undergoes in the course of its advance towards maturity. The BEARDED SEAL (*Phoca barbata*), another northern species, is from seven to ten feet long; and is distinguished from others by having thicker and stronger moustaches. The HOODED SEAL (*Stemmatopus cristatus*) is remarkable for a globular sac, susceptible of inflation, which is situated upon the summit of the head of the males. It grows to the length of seven or eight feet, and inhabits the seas about Greenland and Newfoundland. But by far the largest known species is the ELEPHANT SEAL, or SEA-ELEPHANT (*Macrorhinus proboscideus*); its length being from twenty to twenty-five or thirty feet, and its girth at the largest part of the body being from fifteen to eighteen feet. It is said that a full-grown male will yield seventy gallons of oil. These animals inhabit the Antarctic seas, and are found upon the southern coasts of Australasia, Juan Fernandez, and the neighbouring parts of South America. Their voice resembles the lowing of cattle; and they migrate towards the tropic in winter, and return southwards in summer. They are very inert, not easily alarmed, and make little defence when attacked. The name of Elephant Seal is given to them partly from the large size of their tusk-like canines, and partly from the faculty which the male possesses of elongating the upper lip into a kind of proboscis; they are much sought after, on account of the large quantity of oil they yield; as well as for the skin, which, being of great strength and thickness, is much used in harness-making. —Two more species must be noticed; one called the Sea-Lion, the other the Sea-Bear. The SEA-LION (*Platyrhynchus leoninus*) grows from the length of from six to ten feet, and is said to inhabit both the northern and southern coasts of the Pacific. The colour is yellowish brown; and the males have a large mane upon their necks, which partly covers their head and shoulders. The nails of the fore-feet are very small, and in part wanting. The voice of the males is very powerful. —The SEA-BEAR (*Arctocephalus*

ners of the North American animals in their native haunts, speaking of the Fur Seals, says—"Some twenty or thirty years ago there was a most wasteful destruction of the Fur Seal, when young and old, male and female, were indiscriminately knocked on the head. This improvidence, as every one might have expected, proved detrimental in two ways. The race was almost extirpated; and the market was glutted to such a degree, at the rate, for some time, of 200,000 skins a year, that the prices did not even pay the expenses of carriage. The Russians, however, have now adopted nearly the same plan which the Hudson's Bay Company pursues in recruiting any of its exhausted districts, killing only a limited number of such males as have attained their full growth—a plan peculiarly applicable to the Fur Seal, inasmuch as its habits render the system of husbanding the stock as easy and certain as that of destroying it. In the month of May, with something of the regularity of the almanack, the Fur Seals make their appearance at the island of St. Paul, one of the Aleutian group. Each old male brings a herd of females under its protection, varying in number according to his size and strength; the weaker brethren are obliged to content themselves with half a dozen wives, while some of the sturdier and fiercer fellows preside over harems that are 200 strong. From the date of their arrival in May to that of their departure in October, the whole of them are principally ashore on the beach. The females go down to the sea once or twice a day, while the male, morning, noon, and night, watches his charge with the utmost jealousy, postponing even the pleasures of eating, and drinking, and sleeping, to the duty of keeping his favourites together. If any young gallant venture by stealth to approach any senior chief's bevy of beauty, he generally atones for his imprudence with his life, being torn to pieces by the old fellow; and such of the fair ones as may have given the intruders any encouragement are pretty sure to catch

SEBASTES. (*Sebastes*
Northern Sebastes, or No
an Acanthopterygious fis
Cottidæ (genus *Scorpæn*
habits the Icy Sea and N
plentiful on the coast of
found at Iceland, Greenla
land, &c. It inhabits th
South Greenland, and doe
shore, except when drive
pests. Its colour, when
bright carmine, which is
belly, and mixed with bl
there is likewise a black
of the gill-cover. It rese
form, its body being some
its profile oblong, and the
curves being slightly con
oblique, and the lower ja
The whole fish is clothed
scales. Its flesh is dry, b
by the Greenlanders, wh
and were formerly accus
spines as sewing needles.—
other species of Sebastes
of Good Hope, which very
the above-described; and
differs from it in a few
more like one found in th
there are also two or three
Polynesian seas; several in
and one in the sea of Kam
variabilis), which has the
than any other species.

SECRETARY. [See Se

SEDGE-WARBLER, o
sometimes called also the
(*Sylvia salicaria.*) This
of Reed-sparrow; like the
arundinaceus, it frequents re
places. It is a bird of s
figure: it frequents low,
ting on the top of some spr
dishevelled; while it ut
somewhat discordant so
notes.

...ces the latter colour becomes more ex-...ive, showing itself on the upper parts of ... body; but the extremities externally, ... the tail, retain their blackness to the ... The hair is long, soft, and silky. There ... many species, one of the most famous ...ng the *S. Entellus*, a species of Monkey ...erated by the Hindoo. [See MONKEY.]

...EPIA: SEPIADÆ. A genus and family ... Cephalopods belonging to the Cuttlefish ...be. The best known species is that figured ...our article, the Common or officinal Cuttle-... (*Sepia officinalis*); the little figure at ... side representing the shell, which is often ...nd cast ashore, and is used in medical ...rposes from the pureness of the calcareous

CUTTLE-FISH.—(SEPIA OFFICINALIS.)

...ter of which it is composed. In ancient ...es, and in some part of the Levant even ...w, as we learn from Forbes and Spratt's ...ria, the Cuttle-fish of different species ...re used as articles of food; and we know, ...m the works of travellers, that in other ...rts of the world, when cooked, they are ...eemed luxuries. Cuttle-fish are furnished ...th a curious receptacle for a fluid, which ...y use not only as a direct means of an-...yance, but also for the sake of making ... water turbid, and thus eluding pursuit. ...e CUTTLE-FISH: CEPHALOPODA.]

...EPS. The name of a genus of Saurian ...tiles, which have a long serpentiform ...dy, and four very short legs, each termi-...ted by only three toes. They differ from ... Skinks by having the body still more ...ngated.

...ERICULUS. A genus of birds found ... Australia. [See REGENT-BIRD.]

...ERPENTS. (*Ophidia.*) The general ...me of the third order of *Reptiles*, accord-...g to the *arrangement of Cuvier*. We have ...ribed several of the most remarkable of these Reptiles in separate articles, [see BOA CONSTRICTOR, RATTLESNAKE, &c.] Some observations, however, on their general character will in this place be necessary. These Reptiles are in general easily distinguished from others by the total absence of external feet, hardly a vestige of which is discoverable on the most minute dissection. Their motion is, notwithstanding, very rapid in some species, and is accomplished by means of the sinuosities or folds which they form with their bodies. When in a state of repose they usually dispose themselves in coils, with the head in the centre; and many are enabled to spring to a certain distance by the sudden unfolding of these coils. Serpents are destitute of movable eyelids, or distinct tympanums. All have teeth, but they serve only to retain their food, and are not adapted to mastication. The venomous species have the maxillaries very small and movable, and in them are implanted two teeth much longer than the rest, and traversed by a canal for the purpose of transmitting the poison. These fangs are projected forward in the action of biting, but at other times are disposed along the roof of the mouth, in such a manner as hardly to be discoverable at first sight. The jaws of Serpents are united by ligaments so as to admit of great extension, which enables them to swallow animals of much greater diameter than their own bodies. The tongue is remarkably extensible, and terminates in two long cartilaginous points. They have only one lung. The skin in different genera is annulated, coriacious, or granulated, or, most frequently, covered with scales. They feed on quadrupeds, reptiles, insects, or worms, and swallow their prey entire. They do not drink, and the power of digestion is slow, one meal serving them for weeks, or even months; but when an opportunity offers, they take an enormous quantity of food. The ribs are very numerous, and surround a great portion of the trunk. The muscles, even in the smaller species, are endowed with an astonishing power of constriction; and those species which attain the enormous dimensions of thirty feet or more, are enabled to destroy the larger quadrupeds by involving them in their folds. The Serpent tribes are almost universally regarded with feelings of horror and aversion, which doubtless originate in the venomous qualities of some, and the terrific strength that characterizes others; and also in the insidious manner in which they usually approach their victims. Natural as these prejudices are, it is certain, however, that by far the greater part are perfectly harmless. In northern climates they pass the winter in a torpid state, and change the epidermis in the spring. The eggs are rounded, and agglutinated in bead-like rows by a mucous substance, and, in the venomous species, hatch before they are excluded from the oviduct, and the young are born alive. The females often take care of their young for a time, and, on the approach of danger, have been seen to receive the whole family in their throats, and, when it has passed, to restore them again to the open air. More

than three hundred species are enumerated, most of which, including all the gigantic species, inhabit tropical climates. South America, in particular, abounds with them. The venomous species compose about a fifth of the whole number; and among these are some whose bite is fatal in a few hours, and even minutes. [See SNAKES.]

SERPENT-EATER. (*Gypogeranus.*) A South African bird of prey, often called the Secretary-bird, or Secretary Falcon; agreeing in its general character and some of its habits with the *Falconidæ*, especially those which prey on reptiles, while it differs from the Hawks and Owls in having feet incapable of grasping, and very long legs. Accordingly, it keeps constantly on the ground, in sandy and open places, and wages continual war against reptiles, especially Serpents, which

SECRETARY BIRD.
(GYPOGERANUS SERPENTARIUS.)

it pursues on foot. When this bird attacks a serpent, it covers its breast with one wing (the wings being armed with spurs on the elbow-joints,) to protect itself from the bite, and with the other strikes violent blows, until it has stunned its prey. It then breaks the cranium with its beak, and tears the reptile in pieces, or, if small, swallows it entire. In its wild state the Serpent-eater is shy and difficult of approach; but it is easily tamed, and is often kept in poultry-yards by the inhabitants of the Cape of Good Hope, for the purpose of destroying lizards, snakes, rats, &c. It soon becomes habituated to the poultry; but if left too long fasting, it does not scruple to satisfy its hunger with the young chickens. It runs with great rapidity. Le Vaillant mentions, that having killed one of these birds, which he had seen to vanquish a serpent, he found in its crop eleven rather large lizards, three serpents of an arm's length, and eleven small tortoises very entire, — all of which had received the stroke on the head; as well as a number of locusts, beetles, and other insects, very little injured. The colour of this bird in its perfect plumage is a bluish gray on the head, neck, breast, back, and wing-coverts; the throat white; abdomen black, streaked with rufous; thighs black, streaked with brown; tail feathers black and gray, tipped with white. The skin of the throat and neck are capable of great extension. It builds its nest on high trees, or dense thickets; and is not at all disposed to associate with its fellows. The name of *Secretary* was given to it by the Dutch settlers at the Cape, from a pendent crest on the back of the head reminding them of the pen stuck behind the ear, according to the custom of writing-clerks.

SERPULA. The name of a genus of Anellidans inhabiting cylindrical and sinuous calcareous tubes; generally parasitic on testaceous Molluscs. The tubes of the Serpulæ are found clustering in masses, attached to the surface of stones, shells, or other bodies, which have been immersed for any length of time in the sea: they are usually more or less contorted in form, varying in this respect according to the position in which they grow; but they are always closed at one end, which tapers to a point, the wide end being open to give exit to the head and mouth of the inhabitant. The animal which forms this shell, and resides in it, has its branchial filaments or gill-tufts all assembled round the head; where they form a pair of elegant fan-like appendages. At the base of each series there is a fleshy filament, one of which fits to the mouth of the shell, and serves to close it when the animal is withdrawn into the tube. The body of the animal is composed of a great number of segments; but these are for the most part unprovided with any appendages. The largest species of Serpulæ are found in tropical regions, where they usually form their habitations in the midst of corals, lengthening their tubes as the coral is built up around them. Their length is sometimes as much as three feet; and their expanded gill-tufts are of extremely vivid colours, strongly resembling the most brilliant carnations in general aspect. Numerous smaller species are found on our own coasts; the gills of some of them being remarkable for their brilliant hues.

SERRICORNES. A family of Coleopterous insects, distinguished by the toothed or serrated form of the antennæ. It includes many of the Beetle tribe, which are distinguished for the splendour of their colours, the largest and most brilliant of which are found chiefly in tropical climates. [See BUPRESTIS and ELATER.]

SERTULARIA. A genus of compound tubular Polypes; consisting of those species in which the cells are arranged on two sides of the stem, either opposite or alternate; of these there are many British species, often taken by the ignorant for Sea-weeds. Some of these are most beautiful objects, being finely branded: those indigenous to our coast are described and figured in Johnston's admirable 'British Zoophytes.'

SERVAL. (*Felis serval.*) This fierce and rapacious animal is a native of India and Thibet. It resides principally among trees; leaping with great agility from one to another, and pursuing birds. It resembles the Panther in its spots, but the Lynx in its size, the robustness of its make, and the shortness of its tail.

SESIA. A genus of Lepidopterous insects, comprising those with the antennæ thread-

, elongate-fusiform, and often termi-
ly a small bundle of scales. Many of
ecies resemble Wasps and other Hy-
erous and Dipterous insects, and fly
in the hottest sunshine.

TER. (*Canis familiaris index.*) This
r of the Dog is little inferior in point
acity to any of the species, and sur-
by none in docility or grateful attach-
while its excellent nose and endurance

ENGLISH SETTER.

gue in the field render it of great service
sportsman. In figure it partakes of
ancestors of the Pointer and Spaniel,
r having much of the wavy appearance
latter, and also the ears. Its general
is white, with large liver-coloured
s.

AD. (*Clupea alosa.*) This fish resem-
e Pilchard in general appearance, but
h larger, and flatter in proportion.
lour of the body is bright silver, in-
to dusky on the back, and marked
h side, at a small distance from the
four or more rounded black spots;
es are rather large; the fins are of a
tinge; and the tail is forked. It is a
of the Mediterranean and Northern
d, like the Salmon, ascends rivers, at
ar seasons, for the purpose of de-
its spawn. Like the Herring, it dies
immediately after being taken out of
r, and is supposed to feed chiefly on
insects, and young fish. It is found
ater perfection in the Severn than in
her British river. The Thames Shad
generatively a very coarse fish.—The
which frequents American waters is
dy a different species. It usually
four or five pounds, but sometimes
It is highly esteemed for food, and
ured in great quantities in the fresh
great quantities are salted, but they
so less esteemed than when eaten fresh.
the season they are an important
of wealth to the inhabitants of the
s of the Hudson, Delaware, and Chesa-
rivers.

ARKS. (*Squalidæ.*) A family of Car-
ous fishes, allied to the Rays, and cele-
for the size and voracity of some of
ecies. The form of the body is elon-
and the tail is thick and fleshy. The
is large, generally situated beneath
out, and is armed with several rows
pressed, sharp-edged, and sometimes
d teeth; these are movable at the
the animal, and are usually laid down
inclined backwards, but become erect
moment he is seizing his prey. The
skin is usually very rough, covered with a multitude of little osseous tubercles; and that of some species forms the substance called *shagreen*. They devour with indiscriminating voracity almost every animal substance, whether living or dead. They often follow vessels for the sake of picking up any offal that may be thrown overboard; and, in hot climates especially, man himself frequently becomes a victim to their rapacity. No fish can swim with such velocity as the Shark, nor is any so constantly engaged in that exercise: he outstrips the swiftest ships, and plays round them, without exhibiting a symptom of strong exertion or uneasy apprehension; and the depredations he commits on the other inhabitants of the deep are truly formidable. The eggs of Sharks are few and large, in comparison of those of bony fishes; they are enveloped in a hard, horny, semi-transparent shell, terminated at the four angles with long filaments. Messrs. Müller and Henlé have described many new genera and species of this family.

The White Shark. (*Squalus carcharias.*) The White Shark, in size and voracity the most formidable of all the species, is an inhabitant of most parts of the globe, though much more frequently seen in the warmer than in the colder latitudes. It is believed to reside principally in the depths of the ocean, rising at intervals in order to pursue its prey. It sometimes attains the length of from twenty to thirty feet, and its mouth is sufficiently wide to enable it to receive the thigh, or even the body of a man. The head is of a depressed shape and broad, terminating in an obtusely pointed snout; the margin of each jaw is furnished with from three to six rows of strong, flat, triangular, sharp-pointed, and finely serrated teeth; the tongue is broad, thick, and cartilaginous and the throat extremely wide; the eyes, as in most of the genus, of a bluish or greenish cast. The pectoral fins are large, strong, broad, and pointed; the first dorsal fin falcated behind, and pointed; the second is situated near the origin of the tail, which is slightly lengthened, and of a bilobate shape. The general colour is a pale or whitish ash, but darker on the upper parts. The internal parts of the Shark present many remarkable particulars: the brain is small; the throat is very short, and of a diameter not greatly inferior to that of the beginning of the stomach, which is of vast size, and dilatable to a great degree; the intestinal canal, instead of forming a mere continued tube, consists rather of a large series of meshes or divisions, placed in a spiral direction throughout its length. During the breeding season, which takes place at different periods in different climates, the Sharks are observed to approach the shores, in order to deposit their young in the most favourable situations. The length of the newly-hatched Shark does not exceed a few inches.

The Basking Shark. (*Selachias maximus.*) This species is scarcely, if at all, inferior in size to the White Shark. They generally appear in the Firth of Clyde and among the

Hebrides in June, in pairs, or in small shoals of seven or eight; and depart again in July. They are said to have nothing of the fierce and voracious nature of other Sharks; but are seen sometimes lying quietly near the surface, and at other times leaping with vast agility several feet out of the water. The tail is very large, and the upper part of it remarkable for its extreme length. The upper part of the body is of a deep leaden colour, the belly white: on the back the skin is granulated, like shagreen; and within the mouth, towards the throat, is a very short sort of whalebone. They are viviparous. They are killed by harpooning, which, owing to their strength, is often a long and difficult operation. When killed, they are either hauled on shore, or, if at a distance from land, to the vessel's side: the liver, which is the only part of any value, is then taken out, and melted into oil; of which a large fish will yield eight barrels.

The Blue Shark. (*Squalus glaucus.*) This fish is of a more slender and elegant shape, as well as the most beautiful in point of colour, of all the Sharks. The colour above is blue-green, beneath white: head rather large, with the snout very long and pointed; and the mouth wide, and placed very far under: teeth nearly triangular, sharp, and disposed in three or four rows: eyes large: the tail deeply bilobate, with the lower lobe much larger and longer than the upper. It grows to the length of eight feet, and is an inhabitant of most parts of the globe. It is a very voracious and bold fish, and is scarcely less dreaded by sailors than the Common or White Shark. It is said principally to prey on herrings, shads, and tunnies. It frequents several of the British coasts, particularly that of Cornwall, during the pilchard season, when it is extremely troublesome to the fishermen, by cutting their lines and nets, and devouring the fish. It is taken with large iron hooks prepared for the purpose.

The Fox Shark. (*Squalus vulpes.*) The Fox Shark, or Thresher, is distinguished for the great development of the upper lobe of the caudal fin, or tail, into which the vertebral column is prolonged; this being nearly as long as the entire body, which is plump and sub-ovate. The first dorsal fin is triangular, and placed on the middle of the back; and the pectoral fins are of considerable size: the eyes are large; the mouth small; the teeth triangular, small, and in three rows. Colour, dusky ash above, and whitish beneath. It inhabits the Mediterranean and other seas, and is occasionally met with on our own coasts: it grows to the length of twelve or fourteen feet; and is considered as a voracious and artful fish.

The Hammer-headed Shark. (*Zygæna vulgaris.*) Of all marine animals this is perhaps the most deformed. It resembles the ordinary Sharks in the form of its body, which is sub-cylindric and rather slender; but its head is dilated on each side to a great extent, in the form of a double-headed hammer: the eyes, which are very large, being placed at each extremity: mouth beneath, as in other Sharks. It is a [illegible] the Mediterranean and Indian se[illegible] it is scarcely less voracious and fi[illegible] than even the White Shark itself; a[illegible]

HAMMER-HEADED SHARK.
(ZYGÆNA VULGARIS.)

such as are accidentally bathing in it[illegible] bourhood. It is observed about th[illegible] of the South Sea islands, and partic[illegible] Otaheite, where the natives, trusting [illegible] dexterity in swimming, appear to h[illegible] but little dread.

The Picked Shark. (*Galeus ac*[illegible] This species is from three to four [illegible] length; and is readily distinguish[illegible] very strong bony spine, situated bei[illegible] dorsal fin, and connected at its ba[illegible]

PICKED SHARK.—GALEUS GIANTI[illegible]

the fin itself; teeth small and sha[illegible] disposed in rows along the jaws; ur[illegible] of the tail longer or more projecti[illegible] the lower, which is continued to so[illegible] tance beneath. It inhabits the E[illegible] seas, and is very common about th[illegible] of Scotland, where it is taken in ord[illegible] prepared for sale by splitting and [illegible] and is then much used as a food ar[illegible] poorer classes.

SHARK [MOTHS]. A name g[illegible] collectors to Moths of the genus Cu[illegible]

SHEARS [MOTHS]. A name g[illegible] collectors to Moths of the genus Hu[illegible]

SHEATH-BILL. (*Chionis.*) A [illegible] Shore-birds, or Waders, which ha[illegible] toes, nearly as in domestic poultry, [illegible] scutellated, the beak thick and [illegible] enveloped at the base by a hard [illegible] which, it appears, the bird has the [illegible] raising and depressing. This rem[illegible] bird approaches very near to the [illegible] catchers in its whole anatomy, [illegible] affinity is discernible on comparison [illegible] external characters. The species [illegible] necrophaga, which is from New Ho[illegible] the size of a large Partridge, and [illegible] white. It frequents the sea shore, a[illegible] on dead animal matter thrown up [illegible] tide.

HILL. (CHIONIS ALBA.)

(*Ovis aries.*) A genus of Rumi-
upeds, belonging to the class
and differing so slightly in the
structure from the Goat, that
are by some naturalists united.
al distinctive characters consist
having no beard; in the horns
ed backwards, and then inclin-
more or less forwards; in having
rchead; and in the existence of
ss, situated at the base of the
with hair, and furnished with
llicles. It is generally imagined
imitive stock may be traced to
Sheep of Sardinia and Corsica

BLACK-FACED RAM.

LON], or to the Argali of Asia;
either of these are to be regarded
stock, or as the descendants of
have escaped from the dominion
ome have suggested), is of little
; but this is certain, that al-
oat of these wild sheep consists
iff, and long hairs, they possess
character of wool — an imbri-
surface — which gives to the
finer wool of the domestic races
kable *felting* property upon
culiar utility depends.
ersally allowed, that, with the
horses, and perhaps cattle, Sheep
the most important of all the
imals we have. They not only
ge supply of food, and furnish
rincipal materials of clothing, in
the manufacture of which an immense number of people are employed; but it should be remembered that they can be reared in situations and upon soils where other animals could not find sufficient food for their support. "The dressed skin," says Mr. Pennant, "forms different parts of our apparel; and is used for covers of books. The entrails, properly prepared and twisted, serve for strings of various musical instruments. The bones, calcined (like other bones in general), form materials for tests for the refiner. The milk is thicker than that of cows, and consequently yields a greater quantity of butter and cheese; and in some places is so rich, that it will not produce the cheese without a mixture of water to make it part from the whey. The dung is a remarkably rich manure; insomuch that the folding of sheep is become too useful a branch of industry for the farmer to neglect. To conclude: whether we consider the advantages that result from this animal to individuals in particular, or to these kingdoms in general, we may, with Columella, consider this, in one sense, as the first of the domestic quadrupeds."

Many persons are accustomed to consider the Sheep as the most stupid of all domestic quadrupeds, and as the only one which is probably incapable of returning to a state of nature; that it neither knows how to avoid danger, nor to seek shelter from the changes of the atmosphere, nor even to procure nourishment, except in abundant pasturage. To a certain extent this may be true; but those who have witnessed the boldness and agility with which the Sheep of the Welsh mountains leap from crag to crag, — or the safety with which others descend the rocky precipices of the south-western coasts of the Isle of Wight, to graze on the sweet but scanty herbage which occasionally shows itself among the chalk, and then re-ascend till they reach the summit, bounding upwards with a sureness of foot and strength of spring that seem to rival the goat, — would be disposed to consider that their instincts were neither so obtuse, nor their return to a state of nature, under favourable circumstances, by any means so difficult as they had imagined.

The history of the Sheep may be traced to the remotest antiquity; for we read that "Abel was a keeper of Sheep," and that "Abel brought as an offering to the Lord the firstlings of his flock, and the fat thereof." "There probably is not a species amongst all our domesticated animals," observes Mr. Bell, "which in its historical relations is so interesting as the Sheep. Its early domestication, its employment as the subject of the first sacrifices, its typical character as an offering of atonement, its importance as forming the principal wealth of the early patriarchs — its various connection, in short,

and woollen goods are made from
g this property; the wool is carded,
oven, and then, being put into the
the process of felting takes place.
f the mill make the fibres cohere;
bjected to *the operation contracts in*
width, and its texture becomes more
uniform. This process is essential
to the beauty and strength of woollen cloth. But the long wool of which stuffs and worsted goods are made is deprived of its felting properties. This is done by passing the wool through heated iron combs, which takes away the laminæ or feathery part of the wool, and approximates it to the nature of silk and cotton."—M'Culloch.

with the political, the religious, and the domestic customs of those primitive magnates of the Jewish nation, are all of them subjects forming ample food for deep and delightful reflection. The relation which existed between the patriarchal shepherds and their flocks was indeed of so intimate, and even affectionate a nature, as to have afforded the subject of many of the most beautiful and touching parables and moral illustrations in the Sacred Writings. It is scarcely necessary to refer to the unequalled appeal of Nathan to David, to the still higher and prophetic allusion to the character of the Messiah, or to the sublime illustration of the beneficence of the "great Shepherd of Israel," in the beautiful and well-known pastoral psalm. These are subjects which cannot be discussed here; but it is impossible to pass them wholly without notice. But the historical interest attached to this animal does not stop here. The customs observed in the treatment of their flocks by the shepherds of the Eastern nations in the present day, offer numerous and highly important coincidences with those incidentally alluded to or more distinctly described in the Scriptures."

The habits of the Sheep in its domestic state are too well known to render a detailed account necessary, or to speak of the methods which have been adopted to improve the breed. We shall, however, glean from different sources many particulars relating to them, which are too important to be omitted. We know that the products of this animal are the flesh, milk, skin, and especially the wool, which employs a vast capital in the manufacture of clothing. The fineness of the wool is considerably influenced by the temperature: in a hot climate Sheep yield a comparatively coarse wool; in a cold climate they have a closer but a warmer fleece. The filaments of wool taken from a healthy Sheep present a beautiful polished and even glittering appearance; while that of the neglected or half starved animal exhibits a paler hue. "As for the carcase of the Sheep, it is comparatively lately that even in Great Britain it has been regarded in the light that it deserves. In many foreign countries it is disliked, or at least rarely eaten. The Calmucks and Cossacks seldom touch it. Even in some parts of America there is a prejudice against it. It is an object of little or no value in Spain; and, except among the poorest, it is not there considered fit for food. Since the British sheep-master has begun, and judiciously, to look more to the profit to be derived from the carcase — since the system of artificial feeding has been brought to so great perfection, and a far greater number of sheep can be fed and perfected on the same number of acres, perhaps the wool may have somewhat altered in character. It has grown in length, and it has increased in bulk of fibre. It has not deteriorated, but changed. If no longer fit for the purposes to which it was once devoted, it has become suited to others. The increase of the number of fleeces and the increase of weight in each fleece go far to compensate for the diminution of price, while the improvement of the carcase more than supplies the deficiency, if in truth there was any deficiency to supply. It has been proved by authentic documents, that the number of sheep in the United Kingdom has been more than trebled in the last 150 years. How was this managed? for it was supposed that no more than a given number of Sheep could be kept on a certain space of ground. The quantity of ground was rapidly increased, and much that was formerly deemed unworthy of cultivation was rendered productive; but more effective than this was the new system of husbandry that was introduced — the artificial or turnip husbandry, by which a regular supply of food could be provided for every season. With this was connected the attempt to fatten Sheep still more expeditiously than could be accomplished by any former method. This succeeding beyond his most sanguine expectations, the sheep-master next attempted to increase the size of the breed. He had not, however, sufficiently taken into account a consequence of this. As the carcase increased in size, the wool became longer, heavier, and coarser. The breeder would not see this at first; but he soon began to find that the manufacturer would not purchase it, for it could not be used for the purposes to which it was formerly applied. His stock accumulated. It weighed heavily on his hand. Still he would not believe that his once favourite and yet valuable wool was deteriorated, although he was compelled to sell it at a diminished price. And what was the consequence? Why, that he had no just reason to complain; for the early maturity of the Sheep, and the continued value of the wool for many important purposes rendered his profits greater than they were before he had begun to alter his system." — *Penny Cyclopædia.*

The varieties of the Sheep are very numerous, differing in size, the length of their legs, and the size of their horns: some are covered with hair instead of wool; others have enormous tails; and others, again, pendent ears. The variety most celebrated for the fineness of the wool is the Spanish Merino, as improved in Germany, where both governments and individuals have paid great attention to the improvement of the wool, and in some parts of that country it has been brought to such perfection as to surpass that of any other part of the world. When we look for the origin of the improvements which have been made in the breeding of this animal, which has become so important an element of national wealth, and the source of so much manufacturing and commercial industry, we are obliged to go back to the Romans. Columella, who lived under the Emperor Claudius, gives us interesting information on this point. Among other things, he says that his uncle, who lived in Bœtica (which comprehends the present province of Estremadura), procured some wild African rams at Cadiz, of a coarse fleece, but of an admirable colour. He put them to some fine-woolled ewes, and, the male progeny being again put to Tarentine ewes, the offspring, with their descendants, united the colour of the dire with the fine's

fleece. Other agriculturists unimitated him, and thus the purest communited to the black or partiative flocks, which, according to e common in Spain. The attenby the ancients to the Sheep was and the animal was extremely o that we must account for the from the ancient Sheep to the hich is a hardy animal, thriving any climate, by supposing that ficulturists imitated Columella, crossing the breed imparted a onstitution to the fine-fleeced but eep of ancient Italy. Strabo, inibes the beginning of this improvaving taken place in the reign of Five rams were at that time sold nia, part of Bœtica, for a talent, 00., a price which, considering the ast period, is immense. When the pire was overrun, and almost all vilization swept away, the Tarenin Greece and Italy, being very d requiring the greatest care, beect; but the regenerated stock of the Merinos—being able to live on Italia, survived the conquest of

WESTMORELAND.

the Goths and Vandals; and from inos are descended those animals ply all the manufactories of fine Europe. Care was early taken in t the improved Sheep should not the coarse native Sheep. The at soon took this important branch al industry under its protection, dished particular courts to have n over all subjects connected with ol, shepherds, pastures, &c.

not appear that in this country the an object of much attention prior sion of the Romans; but they es a woollen manufactory at Winhich soon acquired so much cele- it supplied the finest and most woollen cloths for the Roman uch as were employed for the enes of the patricians. Surrounded and grazing land, and the valley that ancient city is situated being y supplied with streams of the ter, the site was well chosen; and enturies, after England had subdued civilized conquerors than the Romans, it continued to be the great of the woollen cloth *trade, as* the *raw material.*

nish breed of Sheep was first in- ow Great Britain in 1787. Some individuals of the black and spotted kinds had indeed been procured and kept in the parks of noblemen previously, but without any regard to the wool; nor was much interest awakened by the flock imported in 1787. Subsequently, great attention was paid to the improvement of English wool; but it was ascertained that though the fleece of the Merino did not degenerate in England, it did not improve; and the farmers accordingly found it for their interest to return to the native breeds, and to give up the Spanish Sheep. The breed of Sheep that was carried out to New Holland and Van Diemen's Land has succeeded remarkably well; and the former promises, at no distant day, to be one of the principal wool-growing countries in the world.

It appears that a great deterioration in the quality of British wool has taken place in the present century. The great object of the agriculturists has been to increase the weight of the carcase and the quantity of the wool, and it seems very difficult, if not impossible, to accomplish this without injuring the fineness of the fleece. We now have to speak of some of the principal breeds of Sheep of which Great Britain can boast.

The *Southdown Sheep* takes its name from an immense tract of downs, formed by a long range of chalk hills extending more than sixty miles in length, through part of the counties of Sussex, Surrey, and Kent. Its head is small and hornless; the face dun, black, or speckled; the ears tolerably wide, and well covered with wool, as is also the forehead, and the space between the ears; the eyes full and bright, but not prominent; the chest wide, deep, and projecting between the fore-legs: the shoulders on a level with the back, and not too wide above, but bow-

SOUTHDOWN SHEEP.

ing outward from the top to the breast: the back flat from the shoulders to the setting on of the tail; the loin broad and flat; the rump long and broad; the hips wide; and the ribs presenting a circular form, like a barrel: the belly as straight as the back: the fore legs straight from the breast to the foot, not bending inward at the knee, and standing far apart both before and behind; the hocks having a direction outwards, and the meeting of the thighs being particularly full: the bones fine, but having no appearance of weakness; and the legs of a speckled dark colour. The wool short, close, curled, and free from spiry, projecting hairs. The Southdown is adapted to almost any situation in the midland part of England, but

and they have also succeeded well in all the southern districts of the kingdom.

The *Dorset* breed. The Dorset Sheep has a strong well-formed body and limbs, a clear white fleece, and finely-curved horns; altogether presenting to the eye an animal which, whatever its intrinsic merits may be, must be considered handsome. The face is long and broad, with a tuft of wool on the forehead; the shoulders low, but broad; the chest deep; the loins broad; and the bone small. Their chief peculiarity is the forwardness of the ewes, which supply the market with lamb when it fetches the highest price. A very profitable variety is found in a cross between the Southdown and the Dorset Sheep; the carcase being increased, and the wool rendered more valuable. In Hampshire, Berkshire, Wiltshire, and Somersetshire, the old breeds, for which these counties were once famous, have generally yielded to cross breeds with the Southdown, or been supplanted by the true Southdowns. In short, we find the same breed either pure, or materially improving the breeds of many other counties, both westward and midland.

The small hardy Sheep, called the *Ryelands*, are still met with in Herefordshire. They are small, polled, with white faces, the wool almost covering the eyes, and the carcase round and compact: they have a tendency to fatten quickly; and they are particularly distinguished by the fineness of their wool. — The *Cheviot* breed, so called from the Cheviot Hills, in Northumberland, have no horns, and are mostly white-faced and white-legged; the body is long, with fine, small, clean-boned legs; the fleece fine, short, close, and thick set. — Wales, both North and South, is celebrated for a small and valuable breed of Sheep, principally used for the supply of the London market, where the Welsh mutton is always in request. — The *Lincolnshire* Sheep are of a large size, and afford a great quantity of wool, owing to the rich marshes where they graze; but their flesh is coarser, leaner, and less finely flavoured than that of the smaller breeds.

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such kinds of Sheep as h
him had an aptitude to
little bone and offal: he
near or distant affinities,
to increase every good po
every bad one. They were
of Sheep that he selected,
breed to which he had been
also introduced the practi
of his rams, which extend
his system far and wide:
the desire for improvemen
or *New Leicester* breed be
it was calculated that 100
spent by the midland farm
of rams. There are few
long-woolled Sheep which
of their excellence to the n
even some of the short-w
deeply indebted to the bree
of the fleece was formerly

LEICESTERSHIRE

it has now not only consi
in length, but improved
strength of fibre, and ave
and seven pounds the fleece
been truly said, that it is
any part of the kingdom
Leicester and the South
not penetrated, and whe
materially improved the n

"Different names are gi
according to its sex and a
called a ram or tup. Afte

ewe or *double-toothed ewe;* and after *two*, or *three*, or *four-sheared ewe* or The age of the Sheep is reckoned, m the period of their being dropped, m the first shearing.

e are several remarkable varieties of us *Ovis* in different parts of the globe, must here be noticed.

MANY-HORNED SHEEP. (*Ovis poly-*) This variety, which is found in and the most northern parts of the dominions, resembles the domestic the shape of its body and tail, though hree, four, five, or more horns, some-laced with great regularity, and some-iffering in proportion and situation. imal is large and formidable in ap-ce: but in its nature it is timid and The wool, which is long, smooth, and very different from that of the n Sheep, is of a dark brown colour; der its exterior coat there is a fine, nd soft kind of wool or fur.

BROAD-TAILED SHEEP. (*Ovis lati-*) This variety is very common in y, Arabia, Persia, Barbary, Syria, and and is principally remarkable for e heavy tail, often so loaded with a fat as to weigh from ten to twenty

LARGE-TAILED SHEEP.

; nay, some writers assert that the e occasionally double that weight, a ad, and supported by a small board, runs on wheels. The upper part is with wool, but it is bare underneath; fat or marrow of which it consists is d a great delicacy.

CRETAN SHEEP. (*Ovis Strepsiceros.*) imal is principally found in the island , and is kept in several parts of Eu-r the singularity of its appearance; us being very large, long, and spiral: f the male are upright; those of the at right angles to the head. By this variety is termed Wallachian

FAT-RUMPED, TAILLESS SHEEP. These are met with in all the deserts of Tar-om the Wolga to the Irtis and the chain of mountains. They have long somewhat arched visage, horns in the ke those of the domestic Sheep, black and large pendent ears. The tail is nes so enveloped in fat as to be scarcely the parts on each side swelling out o naked hemispheres.

The AFRICAN SHEEP. (*Ovis Guineensis.*) The African or Guinea Sheep is a native of all the tropical climates, both of Africa and the East. It is large, with rough hairy skin, short horns, and pendulous ears. Under its chin there is a kind of dewlap; and it has a long mane, which reaches below the neck. They are stronger, larger, and more fleet than other Sheep, and therefore better adapted to a precarious forest life; but their flesh is very indifferent food.

SHEEP-TICK. (*Hippobosca Ovis.*) A well-known insect, extremely common in pasture grounds, about the commencement of summer. The body is very compressed and smooth, the shape triangular, and the colour a blackish brown. It fixes its head in the skin of the animal, and extracts the blood, leaving a large round tumour. This singular animal has no wings, nor does it ever attain them; yet it evidently belongs, from the conformation of its body, to the family *Hippoboscidæ*, as the bed-bug belongs to the tribe of the winged bugs. The fore part of its body is uncommonly small; the thick roundish abdomen, however, is proportionally very large, and generally in circumference about the size of a middling-sized pea. Its colour is pale red, the abdomen lighter, with an irregular white line on each side, and a red spot on the back. The Sheep-tick lays only one egg, which is the nymph or pupa, as in the forest-fly, and is fastened to the wool of the sheep. At first it is white, then brown, and finally the perfect insect escapes from it. As a remedy for this insect, Bock advises that the infested sheep should be washed with a decoction of the crushed or bruised leaves of the common maple. Another method of diminishing or destroying this troublesome insect is given in the Farmer's Magazine for Nov. 1828, by a farmer in Suffolk. He advises the lambs to be put into a bath, by which the production of the sheep-tick will be prevented. The best time for this is July or August. Should it, however, have been neglected, then it is still time, if the weather permits, till Christmas. A pound of arsenic is boiled with a pound of soft soap and a pound of purified potash, in four gallons of water. The arsenic will be perfectly dissolved by the other ingredients. As soon as this is the case, the solution is thrown into a bathing tub sufficiently large to dip a sheep in, and forty gallons more water added to it. In order to dip the sheep, its fore legs must be held by one man and its hind legs by another, so that the feet are held upwards. A man must also stand at the tub, to prevent the head being dipped, so that no poison may get into the ears, which would do it an injury. This man is provided with a sort of tressel, which he holds under the lamb as soon as it is withdrawn from the bath. He then squeezes the fleece with his hands, so that the greater part of the water sucked up by the fleece runs again into the tub. In this way the above-named quantity may serve to dip one hundred moderate-sized lambs in. The author adds, that the arsenic has no injurious effects, if carefully used;

flames, quills, a large band across the belly, and tips of the tail feathers, deep black. A large bay-coloured gorget adorns the breast, and the wing is ornamented with a spot of

SHELDRAKE.—(TADORNA VULPANSER.)

purple-green. The bill, and the fleshy knob at its base, deep red. Feet, flesh-colour. It may often be seen about our largest rivers. Its food consists of small testaceous molluscs, small fish, small crustacea, and marine plants. The female commonly selects a rabbit-hole in which to deposit her eggs; these are ten or twelve in number, and of a pure white: when there is not the convenience of a burrow for nidification, she resorts to the fissures and cavities of rocks. Sheldrakes are very abundant in Holland and on the coasts of France. They may be domesticated, and are handsome ornaments in poultry-yards; but their flesh is rank and bad.

SHELL. The hard calcareous substance which either protects the testaceous Mollusca externally, or supports certain species of them internally. It has been truly said, that he who would know the nature of Shells, must know first the nature of the animals of which Shells form a part; and to this end we at once refer the reader to the article

Every part of a Shell w
with a corresponding pa
ligament, hinge, or tooth.
such shell.—The second
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cess, or a serrated edge,
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posed of a number of fibr
other and perpendicular to
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valve Shells are formed exa
are very different; one ma
the other rough; one flat;
and one is sometimes short
—The Third Order, Univ
of Shells complete in one
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and those without a spire.
posing this order are fix
than those of the two p
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Shell becomes larger and th
surface is generally covere

ng observations, which we
n article in 'Braude's Dic-
nce,' &c., are intended to sup-
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re inorganic laminated, con-
crystalline deposits of calca-
ore or less combined with
atter: they are also formed
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of variety. In many cases,
exists very little correspond-
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n of a mollusc; and the ab-
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closely allied species is exem-
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molluscous sub-kingdom.—
of a shell commences with
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, which is generally followed
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ormed shell of the embryo
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. The nucleus is developed
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ion of the animal; it is pre-
d distinct stages in the deve-
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layers to the inner surface
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ed which the new-formed
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of the future shell.—In many
perture of the shell is entire;
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or more holes; or a portion
d into a canal or siphon; or
a pallial notch opposite to
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rtunately, the reverse of this
case.—True bivalve Shells
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only as small instruments.
function of excavating the burrows inhabited by these Molluscs. But all the species in which the bivalve shell is inadequate to the protection of the whole of the body derive extrinsic defence by burrowing in sand, stone, or wood; and they also commonly line their burrows with a layer of smooth and compact calcareous matter, forming a tube.—In all the Lamellibranchiate Bivalves which are free, the two valves are symmetrical, and the shell is termed *equivalve;* in all those which adhere by one of their valves to foreign bodies, this valve is deeper and larger than the unattached valve: such shells are termed *inequivalve.* If the shell of the common Cockle (*Cardium edule*) be examined, each valve will be seen to be produced into a conical prominence, bent towards, and nearly meeting at, that part by which the valves are joined together. These prominences are termed the *umbones.* The apex, or beak of the umbo, corresponds to the apex of the univalve shell, and is the point at which the development of the bivalve commences. When the apex is directed in the transverse plane of the shell, and so placed that a bisection of the shell in that plane through the apices shall divide the valve into two equal parts, the shell is termed *equilateral:* of this form the common scallop (*Pecten*) is an example. When, upon a similar division, a slight difference is observed in the two valves, the shell is termed *sub-equilateral;* but where the difference is well marked, it is an *inequilateral* bivalve. When the circumference or margin of one valve fits exactly at every part to that of its fellow, it is said to be "regular," or entire; but if it be notched at any part, so as not to come into contact with the corresponding part of the opposite valve, it is "irregular," or emarginate. The most important part of the margin is that which is modified to form the joint or hinge upon which the two valves open and shut. This part is called the "cardinal edge," and generally presents certain prominences and depressions, the projections of one valve interlocking with the depressions of the other. The projections or "teeth," together with the cavities or "cardinal pits," are very regular in their formation in each genus and species of bivalve. What is of more importance is, that every modification in the structure of the hinge is generally found to coincide with some recognizable and more or less important difference in the organization of the soft parts; so that conchologists have justly attached great value to the characters derivable from the hinge, especially for the purpose of generic distinctions. When the teeth are situate beneath the apex or centre of the hinge, they are called *cardinal;* when they are removed from the centre of the hinge, they are named *lateral teeth;* when two only are present, one is called anterior, the other posterior; when there are three, they are distinguished respectively as the anterior, median, and posterior teeth; but when the hinge is composed of a great number of teeth, it is said to be "serial," as in *Arca.* The *direct* medium of union of the two valves is a dense fasciculus of elastic albuminous

diffused over most parts of Europe. The Dog prevents the Sheep from straggling; conducts them from one part of the pasture to another; and will not suffer any strange Sheep to mix with them. In driving a number of well-trained Sheep to a distance, a well-trained Dog always confines them to the road, watching every avenue that leads from it, and pursuing every straggler; and at the Shepherd's signal, this faithful assistant will conduct the Sheep to him from a considerable distance. "In temper and disposition," Mr. Bell observes, "the Sheep Dog is calm, serene, and quiet; but under a thoughtful and almost heavy aspect, there sparkles an expression of readiness and inquiry in his eye, as it peers out from under his shaggy brow, which betokens a spirit always on the alert, and prepared for instant obedience to the commands or wishes of his master. He has not, it is true, the noble port of the Newfoundland Dog, the affectionate fondling of the Spaniel, nor the fierce attachment which renders the Mastiff so efficient a guard; but he exceeds them all in readiness and extent of intelligence, combined with a degree of docility unequalled, perhaps, by any other animal in existence."

Numerous well-authenticated instances of the watchful fidelity, patient care, and instinctive sagacity of the Shepherd's Dog might be adduced; but nothing, perhaps, more interesting than the account which Mr. Darwin gives of the Dogs which are trained to this employment in Banda Oriental, in South America. "While staying at this estancia," he observes, "I was amused with what I saw and heard of the Shepherd Dogs of the country. When riding, it is a common thing to meet a large flock of Sheep guarded by one or two dogs, at the distance of some miles from any house or man. I often wondered how so firm a friendship had been established. The method of education consists in separating the puppy, while very young, from the bitch, and in accustoming it to its future companion. An ewe is held three or four times a day for the little thing

the stranger. The
latter has reached the
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SHOVELLER. (*S*
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can escape the bird wh

The Common Shov
clypeata.) This is a bea
upwards of eighteen in

visiting the sea-coasts. They are not
quent in France, and are sometimes
met with in England, but they are by
means common. They are of a wild,
and solitary disposition. The female
s her nest on the ground, with withered
and lays ten or twelve rust-coloured
Their food consists of worms and the
of insects.

REW. (*Sorex araneus.*) The Shrew
mall insectivorous animal, covered with
velvety fur, and having much of the
al form and aspect of the Mouse. It
however, be easily distinguished from
ouse by its long, taper, cartilaginous
; the eyes, too, are very minute, and
hidden in the surrounding hairs; and
ars are round and close. The Shrew is
y of a reddish mouse colour above,
h beneath, and sometimes tinged with
. The whole structure of this animal
especially adapted to facilitate his
s under the earth; though it is to be
ed that he is not only able to make
y rapidly under ground, but can run
fast when on the surface. The total
, from the point of the snout to the
ning of the tail is under five inches,
e tail is one inch long. The Shrew
ects dry situations, feeding upon in-
worms, and grubs, for the pursuit of
its thin pointed snout is admirably
either among the closest herbage, or
the surface of the soil. The body

SHREW.—(SOREX ARANEUS.)

es a rank musky odour, which renders
distasteful to cats, though they will
y kill them; but its flesh does not seem
disliked by weasels, hawks, and owls,
destroy these little nocturnal insecti-
great numbers. They are common in
-rows, thickets, gardens, &c.; and make
superficial burrows in banks, among the
of trees and brush-wood. These animals
much of the pugnacity and voracious-
f the Mole. The female makes a nest
herbage, in any hole of a bank, &c.,
ed over at the top, and entered at the
and she brings forth in the spring from
seven young ones.

ong the superstitions of olden times
e, that the Shrew Mouse had power
icting serious injury upon cattle by the
ontact of its body. That entertaining
riter Gilbert White, in his *History of*
ne, thus alludes to it and its supposed
y. "At the south corner of the pleator,
, near the church, there stood, about
r years ago, a *very old, grotesque,*
h-ash, which for ages had been looked
ith no small veneration as a Shrew-
ash. Now, a Shrew-ash is an ash whose twigs or branches, when applied to the limbs of cattle, will immediately relieve the pains which a beast suffers from the running of a Shrew Mouse over the part affected; for it is supposed that a Shrew Mouse is of so baneful and deleterious a nature, that wherever it creeps over a beast, be it horse, cow, or sheep, the suffering animal is afflicted with cruel anguish, and threatened with the loss of the use of the limb. Against this accident, to which they were continually liable, our provident forefathers always kept a Shrew-ash at hand, which, when once medicated, would maintain its virtue for ever. A Shrew-ash was made thus: into the body of the tree a hole was bored with an auger, and a poor devoted Shrew Mouse was thrust in alive, and plugged in, no doubt with several quaint incantations long since forgotten!"

There are two other British species, the Water Shrew and the Oared Shrew, the habits of both of which are aquatic, as their names import. Their burrows are formed in the banks of rivers, and their food consists of aquatic insects and larvæ, in pursuit of which they dive with great facility. The WATER-SHREW (*Sorex fodiens*) possesses the same general conformation as the Common Shrew — a body equally slender; a snout nearly as thin and pointed; and its fur has the same soft and silky kind of texture. Its feet are rather broad and formed for swimming, having a lash of stiff white hairs on the edge of the toes; the tail rather slender, compressed at the tip, and fringed with stiff hairs beneath. The head, back, and flanks, a rich brownish black; the under parts nearly pure white. The author of the "Journal of a Naturalist" thus speaks of these pretty little animals: "It is very amusing to observe the actions of these creatures, all life and animation in an element they could not be thought any way calculated for enjoying; but they swim admirably, frolicking over the floating leaves of the pondweed, and up the foliage of the flags, which, bending with their weight, will at times souse them in the pool, and away they scramble to another, searching apparently for the insects that frequent such places, and feeding on drowned moths and similar insects. They run along the margin of the water, rooting amid the leaves and mud with their long noses for food, like little ducks, with great earnestness and perseverance. Their power of vision seems limited to a confined circumference. The smallness of their eyes, and the growth of fur about them, are convenient for the habits of the animal, but impediments to extended vision; so that, with caution, we can approach them in their gambols, and observe all their actions. The general blackness of the body, and the triangular spot beneath the tail, as mentioned by Pennant, afford the best ready distinction of this mouse from the Common Shrew." "Its swimming," says Mr. Bell, "is principally effected by the alternate action of its hinder feet, which produces an unequal or wriggling motion: it makes its way, however, with great velocity, and as it swims rather superficially, with

the belly flattened, the sides as it were spread out, and the tail extended backwards as a rudder, it forms a very beautiful and pleasing object, moving on the calm surface of a quiet brook, or diving, in an instant, after its food, its black velvety coat becoming beautifully silvered, with the innumerable bubbles of air that cover it when submerged; and on rising again, the fur is observed to be perfectly dry, repelling the water as completely as the feathers of a Water-fowl."

SHREW MOLE. (*Scalops aquaticus.*) This little insectivorous quadruped inhabits a great part of North America, along the rivers; and so nearly resembles the European Mole externally, as to be readily mistaken for it; by Pennant it is described as the "Brown Mole." The muzzle is elongated as in the Shrews, and their limbs are adapted for digging into the ground precisely as in the Moles, which they entirely resemble in their mode of life. Their eyes are exceedingly small, and so completely concealed by the hair, as to require the closest attention for their detection. The auricle is entirely wanting, and the integument of the head nearly covers the tube leading to the internal ear. The feet are very short, and five-toed; the fore-feet terminate in a remarkably large hand, of which the fingers are armed with long, flat, and linear nails. The hind feet are very delicate, and the toes are provided with small hooked nails. This animal burrows with great quickness: his soft and polished fur, preventing friction, tends to facilitate his subterranean march; which is generally straight forward, or in gentle curvatures, at a very little distance from the surface; though sometimes numerous galleries are formed, communicating with each other, through which he is enabled to travel in various directions. Shrew Moles are most active in the morning and at mid-day; and it is observed that their daily appearance above ground at twelve o'clock is truly remarkable. The Shrew Mole is covered with a bright glossy fur, about half an inch in length, and of a very bright lead colour, very closely set, and in all parts directed backwards.

SHRIKE. (*Lanius.*) There are many species of these birds; and it is in this family (the *Laniadæ*, or Shrikes) that we find the largest and most rapacious of the Dentirostral tribe. In their general habits many of the Laniadæ resemble the Raptorial birds; for they sit motionless upon their perch, watching for their prey, and then suddenly dart upon it. They live in families for a few weeks after the breeding season; fly irregularly and precipitately, uttering shrill cries; nestle on trees or in bushes; lay five or six eggs, and take great care of their young. Some have the upper mandible arched: those in which its point is strong and much hooked, and in which the notch forms a small tooth on each side, manifest a degree of courage and cruelty which has led to their association with the Birds of Prey by many naturalists. Many of them have the curious habit of impaling the animals they have caught upon a large thorn; and then pulling them to pieces, and devouring them at their leisure. Hence th[illegible] have derived the name of *Butcher-bir[illegible]* The Shrikes have great power of clutchi[illegible] with their toes, and always hold their pr[illegible] in one foot, resting on the tarsal joint [illegible] that foot, unless when they have fastene[illegible] it upon a thorn, when they pull it to pie[illegible] in a contrary direction. They exhibit gre[illegible] courage in defending themselves and the[illegible] nests from more powerful enemies; a[illegible] the parents show great attachment to ea[illegible] other and to their young.

Of this genus there are three British sp[illegible]cies, two only of which are commonly m[illegible] with; these are

The RED-BACKED SHRIKE (*Lanius cu[illegible]lurio*), which has derived its English nam[illegible] from the back, scapulars, and wing-cover[illegible] being of a rusty red colour. This speci[illegible] arrives in England in May, breeds in th[illegible] southern counties, and departs in Septembe[illegible]

RED-BACKED SHRIKE.—(LANIUS COLLURIO.)

Its nest, which is formed of moss and lin[illegible] with hair, is placed in hedges. It is con[illegible]siderably smaller and scarcer than the ne[illegible] species.

The SENTINEL SHRIKE; or GREAT GRA[illegible] SHRIKE. (*Lanius excubitor.*) This speci[illegible] is as large as a Thrush. Its bill is blac[illegible] and furnished with bristles at the base; th[illegible] upper parts of its plumage pale blue ash[illegible] white underneath; the wings, tail, and [illegible] band crossing the eyes, black; some whi[illegible] on the scapulars and tail. It is common a[illegible] the year in France, and is known in th[illegible] country chiefly as a somewhat rare winte[illegible] visitant. "It is one of our late birds [illegible] passage, but its arrival is soon made know[illegible] to us by its croaking, unmusical voice fro[illegible] the summit of some tree. Its nest is larg[illegible] and ill-concealed; and during the season [illegible] incubation the male bird is particularl[illegible] vigilant and uneasy at any approach toward[illegible] his sitting mate, though often by his clamor[illegible]ous anxiety he betrays it and her to every bird-nesting boy. The female, when th[illegible] eggs are hatched, unites her vociferation[illegible] with those of the male, and facilitates th[illegible] detection of the brood. Both parents ar[illegible] very assiduous in their attentions to thei[illegible] offspring, feeding them long after they hav[illegible] left the nest, for the young appear to be heavy, inactive birds, and little able t[illegible] capture the winged insects that constitute their principal food. I could never observe that this bird destroyed others smaller than

itself, or even fed upon flesh. I have hung up dead young birds and even parts of them, near their nests, but never found that they were touched by the Shrike. Yet it appears that it must be a butcher too, and that the name "*lanius*," bestowed on it by Gesner two hundred and fifty years ago, was not lightly given. My neighbour's gamekeeper kills it as a bird of prey, and tells me he has known it draw the weak young pheasants through the bars of the breeding-coops; and others have assured me that they have killed them when banqueting on the carcase of some little bird they had captured. All small birds have an antipathy to the Shrike, betray anger, and utter the moan of danger, when it approaches their nests. I have often heard this signal of distress, and, cautiously approaching to learn the cause, have frequently found that this Butcher-bird occasioned it. They will mob, attack, and drive it away, as they do the Owl, as if fully acquainted with its plundering propensities. Linnæus attached to it the trivial name "*excubitor*," a sentinel; a very apposite appellation, as this bird seldom conceals itself in a bush, but sits perched upon some upper spray, or in an open situation, heedful of danger, or watching its prey." This species of the Shrike tribe feeds upon mice, shrews, small birds, frogs, lizards, and large insects. The nest is generally built on trees, and is framed of grass-stalks, roots, and moss, with a lining of down or wool. The eggs, from five to seven, are grayish white, spotted on the larger end with light brown and ash. Wilson, speaking of the American Shrike (*Lanius septentrionalis*), a species closely allied to the *L. excubitor*, says, "The character of the Butcher-bird is entitled to no common degree of respect. His activity is visible in all his motions; his courage and intrepidity beyond every other bird of his size (one of his own tribe only excepted, *L. tyrannus*, or King-bird); and in affection for his young, he is surpassed by no other. He associates with them in the latter part of summer, the whole family hunting in company. He attacks the largest hawk or eagle in their defence, with a resolution truly astonishing; so that all of them respect him, and, on every occasion, decline the contest. As the snows of winter approach, he descends from the mountainous forests, and from the regions of the north, to the more cultivated parts of the country, hovering about our hedgerows, orchards, and meadows, and disappears again early in April."

There are numerous exotic species with arcuated beaks, the points of which diminish by degrees. Other Shrikes have the superior mandible straight, and abruptly hooked at the tip. Others again, with a straight and slender bill, are remarkable for their crests of vertical feathers. Some species have the beak conical and rounded, without any ridge, somewhat arched towards the tip, with a very fine point, slightly emarginated on each side. Their feet are very short, and the wings in particular reach beyond the tail, which renders their flight similar to that of a swallow; but they have the courage of the Shrike family, and do not fear to attack even the Crow. Numerous species inhabit the coasts and islands of the Indian Ocean, where they are continually seen on the wing, flying swiftly in pursuit of insects.

SHRIMP. (*Crangon vulgaris.*) A small crustaceous Decapod, allied to the Lobster and Crawfish, which frequents shallow waters along the sea-coast. It does not exceed two inches in length, and is of a pale glaucous green colour, dotted with grey. In shape it resembles the larger crustaces just mentioned, but it is more elongated in proportion, and is destitute of the large anterior claws; and it is distinguished from the Prawn by the absence of the long, anterior, serrated spine. The Shrimp has ten feet; the tail is as long as the body, and terminated at the extremity with scale-like appendages, which unfold somewhat in the manner of a fan. During life the body is semi-transparent, and so much resembles sea-water that the animal is distinguished with difficulty. Its ordinary motion consists of leaps. It is abundant in sandy places on the coast; and besides furnishing nutriment to great numbers of fishes, aquatic birds, &c., it is in great request for the table.

Shrimp-catching, or *Shrimping*, as it is termed, affords abundant employment on the flat sandy parts of our coast to boys and women, who wade up to their knees, pushing a sort of dredge-net at the end of a long pole before them; but a more wholesale way of collecting them is by means of sweep-nets, dragged over the fishing ground by men in boats.

SIALIDÆ. The name given to a small group of Neuropterous insects, having very large anterior wings. They frequent the neighbourhood of water, and pass their larva state in that element. The ordinary species, (*Sialis lutaria*) is of a dull brown colour, and is a well-known bait with the angler, being produced in the spring months in great quantities, and may be found upon walls or palings near the water. The female attaches her numerous eggs, with the greatest regularity, to rushes or other aquatic plants. The larva swims well by the assistance of several pairs of articulated setose filaments attached at the sides of the abdominal segments. When full grown, this larva quits the water, and burrows into the adjoining bank, in which it forms a cell, wherein it is transformed into an inactive pupa, with the limbs laid along the breast. The insect assumes its perfect form in its cell.

SIAMANG. (*Hylobates syndactylus.*) The Siamang is a quadrumanous animal, inferior to the Chimpanzee and Orang-Outang both in structure and intelligence; and belongs to that division of Apes called *Gibbons*. These animals have long, thick, glossy black hair over the whole body, but particularly on the shoulders, back, and limbs; they are distinguished by the possession of small rudimentary callosities; and they derive their specific appellation of *syndactylus* from having the second and third toes of the hind foot united by a narrow membrane the whole

length of the first joint. They are slow and heavy in their gait, but so vigilant as not to be easily surprised; when it does happen, however, they are so conscious of their inability to make effectual resistance, that overwhelmed with fear, they quickly fall into the hands of their pursuers. They live in numerous troops, which, it is said, are conducted by vigilant and courageous chiefs, and at sunrise and sunset they make the forests resound with frightful cries, which may be heard at a prodigious distance. From the accounts given by M. Duvaucel, who had numerous opportunities of observing the Siamang, in Sumatra, both in his wild state and in bondage, we learn that while dwelling in his native woods he exhibits an absence of all intellectual faculty, hunger itself being insufficient to excite, or divest him of his natural apathy; and that confinement, however long, seems to have no effect in modifying his characteristic stupidity and sluggishness; in short, he never acquires the familiarity of other apes; and even his submission appears to be rather the result of extreme apathy, than of any degree of confidence or affection.

SIBERIAN DOG. This useful variety of the canine race is distinguished by having its ears erect, and the hair of its body and tail very long; it is also distinguished for its steadiness, docility, and endurance of fatigue when used for the purpose of draught. In many northern countries these dogs are employed in drawing sledges over the frozen snow, five of them being yoked to each sledge, two and two, with the fifth in front as a leader. In general only one person rides in a sledge, who sits sideways, and guides the animals by reins fastened to their collars Such is their fleetness, that they have been known to perform a journey of 270 miles in three days and a half, and such their strength that they will convey a sledge containing three persons and their luggage sixty miles in a day.

SILIQUARIA. A molluscous animal, very long and spiral, inhabiting an irregularly twisted tube, tapering towards one end; the other end open; and a longitudinal fissure throughout its whole length, corresponding with a similar cleft in that part of the mantle which covers the branchial cavity. Along the whole side of this cleft is a branchial comb, composed of numerous delicate and tubular-like leaflets. It has a distinct head, and two small tentacula, with eyes at the base. Found in the Mediterranean and the Indian Seas.

SILKWORM. The SILKWORM MOTH (*Bombyx mori*) is a whitish moth, with a broad pale brown bar across each of the upper wings. The larva or caterpillar, emphatically styled the Silkworm, is of a yellowish gray colour, and, when full grown, nearly three inches long; on the upper part of the last joint of the body is a horn-like process, similar to that on several of the Sphinx Moths. It feeds, as every one knows, on the leaves of the white mulberry, or, when they cannot be obtained, on those of the black mulberry or lettuce. The Silkworm remains in its larva state about six weeks, changing its skin four times during that period, and, like other caterpillars, abstaining from food for some time before each change. When full grown it entirely ceases to feed, and begins to form itself a loose envelopment of silken fibres in some convenient spot which it has chosen for that purpose, and afterwards proceeds to enwrap itself in a much closer covering, forming an oval yellow silken case or ball about the size of a pigeon's egg, in which it changes to a chrysalis, and after lying thus enclosed about fifteen days, gives birth to the Moth. This, however, is always carefully prevented when these insects are reared for the purpose of commerce, the Moth greatly injuring the silk of the ball by discharging a quantity of coloured fluid before it leaves the cell.

The Silkworm, when first hatched, is black, and does not exceed in length one fourth of an inch. The desire for food is the first symptom it exhibits of life, and at this period it is more active than at any other. When about eight days have elapsed after its hatching, its head becomes considerably enlarged, and it turns sick, refuses food, and remains in a state of lethargy for about three days. This sickness would appear to arise from the pressure of the animal's skin, which has become too tight for the increased bulk of its body. Indeed, the very great difference in the size of the worm, from the beginning to the end of its caterpillar state, is so great, that nature has furnished it with several skins, each of which it casts in succession. The body is begirt by twelve rings, which approach to or recede from each other, according to its motions: there are nine breathing holes on each side of the body; seven eyes on each side of the head; and two small orifices below the jaw, through which the worm ejects its silken filament.

The art of making the filamentous substance available for the use of man, seems to have originated with the Chinese, and to have been discovered at a very early period; but although the propagation of the Silkworm was confined to that country, the raw material was purchased and manufactured by the Persians, Tyrians, Indians, &c. for a long time before any attempt was made to establish it in Europe. For many ages silk bore an enormous price at Rome; but about the middle of the sixth century, during the reign of Justinian, two monks arrived at Constantinople from India, bringing with them the white mulberry, and the eggs of the Silkworm. This, however, is not the place for pursuing the history of the silk manufacture, or we might trace its progress from the East to Greece, and thence through Italy, Spain, and France, where the culture of the mulberry-tree, and the attention paid to the rearing of Silkworms, still form a most important feature in the industrial resources of the country.

"I was occupied the other day," says Mr. Jesse, in his 'Gleanings,' "in reflecting on the benefits accruing to mankind from a remarkable instinct, implanted by the great Creator on that undistinguished insect the Silk-

worm. What warmth and comfort does it afford to us! How useful, convenient, and elegant, is the clothing we derive from it! But this is not all. Let us, for one moment, consider how many thousands of persons are indebted to it for almost their very existence, in consequence of the employment it affords to man in nearly every country of the known world. There is, however, another striking and interesting peculiarity attending the Silkworm. It is this; that while the caterpillars of all the other tribes of moths and butterflies, when they have arrived at a certain state of maturity, show a restless disposition, and wander about and hide themselves in a variety of places in order to spin their cocoons, preparatory to their making their escape as Moths, &c., the Caterpillar of the Silkworm, on the contrary, is content to remain stationary in the open tray, or box, in which it may be placed. After consuming its immediate supply of mulberry leaves, it waits for a further quantity; and when the period arrives for spinning its cocoon, instead of showing any migratory disposition, it seems to place itself with confidence under the care of man to provide it with a suitable place for its convenience and protection. In the fly or moth state, the female is quite incapable of flight; and the male, although of a much lighter make, and more active, can fly but very imperfectly. This latter circumstance insures to us the eggs for the following season, thus completing the adaptation of the insect in its different stages to the purposes it is destined to fulfil for our advantage. To my mind this striking peculiarity in the habits of the Silkworm illustrates the care and kindness of the Almighty, in thus making an apparently insignificant insect the means of so many important benefits to man."

SILURIDÆ. A family of Malacopterygious fishes, of which the genus *Silurus* is the type. They are chiefly distinguished by the want of true scales, having merely a naked skin, or large osseous plates. The species included in this group are mostly

SILURUS GLANIS.

river-fish, of considerable size, inhabiting warm climates. Many of them have the first ray of the pectoral fin very strong and bony; and the fish can, at pleasure, lay it flat on the body, or keep it fixed in a perpendicular direction, in which case it becomes a formidable weapon, capable of inflicting very severe wounds.

The only known *European species* of the *Siluridæ* is the SILURUS GLANIS, a fish of very large size, found in the lakes of Switzerland, the Danube, the Wolga, the Elbe, and other large rivers in the north of Europe; as also in many of the fresh waters of Asia and Africa. It sometimes grows to the length of from six to eight feet, and to the weight of 300lbs. The head is broad and flat; the body thick and of a lengthened form, with the abdomen very thick and short; the mouth very large and wide, and on each side of the upper lip is a long barbule; the jaws are circular, the lower one the longest, and both furnished with numerous small incurved teeth. The back is round, of a dark green; paler below; and the whole body covered with dark irregulary-formed spots. Mr. Yarrell observes, that "the Silurus is represented as sluggish in its habits, and a slow swimmer, taking its prey by lying in wait for it, in a manner somewhat similar to the Angler (*Lophius*); hiding itself in holes or soft mud, and apparently depending upon the accidental approach of fishes or other animals, of which its long and numerous barbules may be at the same time the source of attraction to the victims, and the means of warning to the devourer. From its own formidable size, it can have but few enemies in the fresh water; and from them its dark colour, in addition to its habit of secreting itself either in holes or soft mud, would be a sufficient security. In spring the male and female may be seen together, about the middle of the day, near the banks or edges of the water, but soon return to their usual retreats. The ova when deposited are green; and the young are excluded between the sixteenth and nineteenth days. The flesh of the Silurus is white, fat, and agreeable to many persons as food, particularly the part of the fish near the tail; but on account of its being luscious, soft, and difficult to digest, it is not recommended to those who have weak stomachs. In the northern countries of Europe, the flesh is preserved by drying, and the fat is used as lard."

The ELECTRICAL SILURUS, or MALAPTERURUS, which inhabits the Nile, the Senegal, and other African rivers, is from ten to fifteen inches in length: the head very broad and depressed; on the upper lip two cirri, on the lower four; teeth small and numerous. It appears to derive the power of giving electrical shocks from a particular tissue situated between the skin of the sides and the muscles. It possesses this electric or galvanic power, however, in a much slighter degree than the Torpedo.

SILVER-FISH. A well-known small species of the Carp tribe. [See GOLD-FISH.]

SILVER-LINE [MOTHS]. A name applied by collectors to Moths of the genus *Hylophila* [CHLOEOPHORA].

SILVER-RINGLET [BUTTERFLY]. A name applied by collectors to Butterflies of the species *Hipparchia hero*.

SIMIA. The generic name applied by Linnæus to all the different species of quadrumanous Mammals, except the Lemurs. They are divided into numerous sub-genera,

but the term *Simia* is no longer used, except by some modern naturalists to the Orang-outang. [See APE, MONKEY, &c.]

SIMULIUM, or SAND-FLY. An extremely troublesome Dipterous insect, respecting which, in its different stages, Mr. Newman furnishes the following information:—"The eggs of the *Simulia* or *Sand-fly* appear to be at present unknown; there is, however, little doubt that, like those of other gnats, they are deposited on the surface of the water, and in that situation are hatched by the warmth of the sun combined with the moisture of the water. The larva is found on the stems of water-plants (*Phellandrium*, &c.), on those portions which are always covered by the water. It is long, cylindrical, considerably thickened posteriorly, and nearly transparent; its head is distinctly separated from the body, and is of an oblong form; it has four jaws moving horizontally, each bifid at the tip, and two little horns in the usual place of antennæ, inserted in the front of the head, rather towards each side: each of these is composed of two joints, the first or basal joint stout, the second or apical one divided into many rays, which fold back on the first joint: there are two very small eyes on each side of the head. The body of the larva is divided into twelve segments, besides the head; of these, the second is incrassated, and furnished below with a retractile conical foot; the last segment is very minute, and furnished with two small prehensile feet: the air-tubes, so very plainly seen in other aquatic larvæ, are totally wanting; neither is there the least appearance of spiracles or breathing-holes in the sides.

"The motion of the larva in the water is tolerably brisk; but on any object coming in contact with it, it instantly becomes motionless, attaches itself by the anterior prehensile foot, and remains for a long time perfectly still and immovable. When it moves from one place to another, its progression is undulating, somewhat like that of a leech, being performed in this manner:—the anterior foot is firmly attached to some object, then the posterior pair of feet are brought up to it, the back arching up during the operation; the anterior foot then releases its hold; the body is again elongated, the foot attached further on, and the posterior feet again brought up to it. The food of the larva is unknown: when full grown, it spins a little silken sheath, in shape like a watch-pocket, which is attached to the plant frequented by the larva, and in this it shortly changes to a pupa in an upright position: the case being always open at top, the head and shoulders of the pupa are seen projecting above it. The pupa much resembles that of a moth: it is perfectly motionless, of a brown colour, and exhibits very distinctly the parts of the perfect insect through its skin: from the back of its head arise, on each side, four hair-like appendages; these are tubular, and appear to be designed for breathing. About the 6th of July the little creature bursts from its sheath; the case of the chrysalis opens in a right line down the back, and the perfect insect emerges through the opening, surrounded by a bubble of air, and slowly begins to unfold its wings under the water; finally, its skin being cast, and maturity attained, the Imago disengages itself from its former habitation, and mounts within its bubble to the surface of the water, when the bubble bursts, and the creature, with its new organs, has acquired a new element. The imago is a small black fly, with two large transparent wings, which, when at rest, repose horizontally on its back; moderately long legs, and short stout antennæ: it flies with ease, and somewhat sportively, rising and falling. In this country it is found in the damp parts of woods, and other similar situations; but, happily, in very limited numbers."—"The *Simulium* seems to have adopted the world for its country: no known land appears to be without it; all temperatures suit it—the polar snows and the blaze of tropical sands. Yet *all* the flies of which travellers complain so dreadfully annoying, are not *Simuliæ*;—many of our commonest gnats have a similar taste for blood. Although, from what is related, there can be no doubt that the blood of man is an acceptable food to the *Simulia*, yet it is remarkable that the greatest multitudes of these creatures inhabit those bleak, inhospitable, and almost inaccessible regions where the foot of man seldom treads, and where other warm-blooded animals are scarcely known to exist. It is clearly ascertained that the female *Simuliæ* alone suck the blood of man; the males spend their lives among the leaves of trees, or settle on flowers, from which they appear to derive nutriment; it is therefore far from impossible that, on the failure of animal, the females may also have recourse to vegetable food."—*Hist. of Insects.*

SIPHONAPTERA. A name given by Latreille to an order of insects, including those Apterous species which have a mouth in the form of a siphon.

SIPHONARIA. A genus of Mollusca, the shell of which greatly resembles the Patella in shape. The animal has no tentacula or visible eyes. They are found on the coasts of South America, Australia, and in the Mediterranean.

SIPHONOBRANCHIATA. The name of an order of Gasteropodous Mollusca, including those in which the branchial cavity terminates in a tube or siphon, by which the respiratory current of water is received and expelled.

SIPHONOSTOMA. An order of Crustacea, all of which are parasitic upon Fishes, aquatic Batrachia, &c., comprehending those which have a siphon-shaped mouth for suction.

SIPUNCULUS. The name of a genus of worms which conceal themselves in the sands of the sea-shore, and occasionally protrude their heads from the orifice. They are much sought after by the fishermen, who use them, like the Common Lob-worm, (*Lumbricus Piscatorum*), as baits for their hooks. Some

attach stony particles to their skin, ntinous exudation, so as to cover it ard crust, resembling that formed by nnelida.

N. A genus of remarkable Batra- reptiles, peculiar to the Southern es of the United States. They have gated form, nearly like that of eels, ranchial tufts on each side; only one feet; a flattened head, and obtuse ; eye very small; the ear concealed; aw armed with a horny sheath and rows of small teeth; the upper jaw s; but numerous small, retroverted ccur on the palatal region. The ous organization of this reptile, and arent relationship with different fa- rendered it for a long time doubtful ch it belonged. At length Cuvier torily established, that the Siren was e *sui generis*, which never could have et, and whose bony framework dif- specially from that of the Sala- s; that there was no probability that changed its form or lost its branchiæ; at the Siren is consequently a true ian, which respires at will throughout , either in the water by means of ie, or in the air by means of lungs. me naturalist adds, that it is to the nders that the Sirens approach most by the structure of the head, al- neither the general form nor the ions of the parts have so near a ity. The Axolotl belongs to a closely enus. [See AXOLOTL.]

EX: SIRICIDÆ. A genus and fa- Hymenopterous insects, of which the *gigas* may be taken as a type. They e antennæ jointed, and inserted near ehead; the mandibles toothed inter- the maxillary palpi very small, nearly , and two-jointed, with the extremity abdomen prolonged into a horn, and positor exserted and formed of three . These insects are of large size, and

SIREX GIGAS.

ly inhabit pine forests in cold and ous countries, and produce during buzzing noise like that of the Hum- . In those countries they appear, in certain seasons, in such abundance that they become objects of popular dread. The larvæ have six feet, with the posterior extremity of the body terminated in a point; they live in wood, where they spin a cocoon and undergo their transformations. The *Sirex gigas* has sometimes, though rarely, occurred in this country, and is as large as a Hornet.

SISKIN, or ABERDEVINE. (*Carduelis spinus.*) A song-bird, very similar in colour and general appearance to the green variety of the canary, though somewhat more dusky on the back and head. It is a lively and persevering songster; soon becomes familiar

SISKIN OR ABERDEVINE: MALE AND FEMALE. (CARDUELIS SPINUS.)

when in captivity, and is often paired with the canary-bird. It breeds in Sweden, Norway, the north of Germany, and sometimes in the Highlands of Scotland, visiting England only in the autumn and winter. In most places they are migratory, but do not seem to observe regular periods, as they are sometimes seen in large, and at other times in very small numbers. Buffon observes that these immense flights happen only once in the course of three or four years. They conceal their nest with much art. In some parts of the south of England it is called the Barley-bird, being seen about that seed-time; and in the neighbourhood of London it is known by the name of the Aberdevine.

SITTA. The Linnæan name of a genus of birds, of which the Nuthatch is the type. [See NUTHATCH.]

SKATE. (*Raia batis.*) This fish, the true Skate, in proportion to its bulk, is the thinnest of any of the *Raiadæ* as well as the largest, some being known to weigh near two hundred pounds. The breadth of the body is to its length nearly as four to three. The nose is conical; and above the eyes there is

a set of sharp spines. The whole upper part is of a dull brown colour, sometimes streaked with black; the lower part is of a dusky white, marked with many small black spots; and the jaws are covered with small granulated but sharp-pointed teeth. The tail is of a moderate length, and two fins near its extremity; along the top of it there is one row of spines, and on the edges a few more are irregularly dispersed. In the males of this species the fins are full of spines. The females are generally called Maids; and fishermen distinguish the females of the three species of most frequent occurrence by the names of Skate Maid, Thornback Maid, and Homelyn Maid,—frequently calling the old male of the Skate with his two long appendages the Three-tailed Skate. It is a very voracious fish, and commits great havoc among numbers of the finny tribe and crustaces. It is found on the coast of Scotland, among the Orkneys, in many parts of the Irish coast, and on the British coasts from Cornwall to Kent.

The FLAPPER SKATE. (*Raia intermedia.*) This species is distinguished from *Raia batis*, in the upper surface of the body being perfectly smooth, without granulations, and of a dark olive colour spotted with white; in the dorsal fins being more remote from each other, and in the anterior margins of the pectorals being rather more concave, giving the snout a sharper appearance.

SKIPPER. A name commonly applied to the Mackerel Pike, or Saury Pike (*Scomberesox saurus*). They are gregarious fishes; and are followed and preyed upon by Porpoises, and also by the Tunny, and other large members of the *Escocidæ* or Mackerel family.

SKIPPER [BUTTERFLIES]. A name applied to several species of Butterflies, of the genera *Thymele* and *Pamphila*.

SKUA GULL. [See GULL.]

SKUNK. (*Mephitis Americana.*) A carnivorous animal of the genus Mephitis inhabiting both North and South America. It has short round ears, black cheeks, and a white stripe extending from the nose to the back. The upper part of the neck and the whole back are white, divided at the bottom by a black line, commencing at the tail, and passing a little way up the back. The belly

SKUNK.—(MEPHITIS AMERICANA.)

and legs are black; the tail is very full of long coarse hair, generally black, sometimes tipt with white; and the claws are long, like those on the fore feet of the badger. This animal is remarkable for the intolerable odour of the secretion from its glandular pouches, which it has the power of ejecting on its pursuers, and serves as a most complete means of defence; the least quantity of it being enough to produce nausea and a sense of suffocation. Clothes that are infected with this smell retain it for many weeks; and nothing, it is said, will render them sweet, but burying them for a time in the fresh earth. As soon as the animals are dead, the glands from which this vapour issues are cut away, and the flesh, then untainted, is eaten by the American Indians, who say the flavour much resembles that of a young pig. There are several species of this genus, all of them American.

SKY-LARK. [See LARK.]

SLOTH, or AI. (*Bradypus tardigradus.*) An herbivorous Edentate quadruped, of most uncouth appearance, treated by Buffon as one whose existence must be a burthen to it, from its imperfect formation; but though uncouth and apparently disproportioned, it is found on examination that the organization and habits of the Sloth are as completely adapted to each other, as are those of any other animal. It is true that the arms or fore legs are nearly twice as long as the hinder pair; and that when it attempts to walk on the ground, the action is most awkward and laborious: but when we consider that the Sloth is formed to live not on the ground but in trees, and not on the branches of trees, like the squirrel, but *under* them, the complete adaptation of its whole structure to its mode of life becomes apparent. No man had a better opportunity of observing this animal than Mr. Waterton, during his long residence in the wilds of South America; and he, a close observer and just reasoner, thus writes: "He moves suspended from the branch, he rests suspended from the branch, and he sleeps suspended from the branch. Hence his seemingly bungled composition is at once accounted for; and in lieu of the Sloth leading a painful life, and entailing a miserable existence upon its progeny, it is but fair to conclude that it just enjoys life as much as any other animal, and that its extraordinary formation and singular habits are but further proofs to engage us to admire the wonderful works of Omnipotence." They bring forth and suckle their young like ordinary quadrupeds; and the young Sloth, from the moment of its birth, adheres to the body of its parent till it acquires sufficient size and strength to shift for itself. The head of the Sloth is short, the face small and round, the hair coarse and shaggy, differing considerably in colour in different individuals, but resembling, in general, dry withered grass or moss. Its powerful claws, and the peculiarly enduring strength of its long arms, make very efficient weapons of defence against the large snakes by whom it is often attacked. It has sometimes been brought to this country: a specimen was in the Zoological Gardens, Regent's Park, in 1836.

The following is Dr. Lund's account of the THREE-TOED SLOTH (*Bradypus tardigradus*),

e kept in his house for a considerable
This animal climbs with remarkable
and aptitude, although, as is well
with a degree of slowness which,
r, may be called rapidity in com-
with its terrestrial movements. The
in which it moves is this:—Lying
belly with all its four extremities
d out from its body, it first presses
s hind feet with all its might against
and, whereby the corresponding side
ody is a little raised. The fore leg

THREE-TOED SLOTH.
(BRADYPUS TORQUATUS.)

same side thus becomes sufficiently
the animal to advance it a trifle for-
It then hooks its powerful claws fast
earth, and so drags its body a little
s. The same manœuvre is next re-
on the opposite side; and thus the
nature progresses in the slowest and
aborious manner possible. But in
ion as the Sloth's organization unfits
terrestrial progression, is it wonder-
dapted to climbing trees. With its
ms it reaches high up, and clings fast
anches with its strong crooked claws.
verted position of the soles of its hind
es it a power of *grasping* the trunk
ree which no other mammal possesses.
truly when we see it climbing a tree,
scarcely believe it to be the same ani-
at lies so helpless on the ground.
we see that the Sloth's organization
ly adapted for living in trees. Com-
rith the slowness of its motions, it is
climber among mammals, while it
west walker; or rather, it is the only
al that can neither walk nor stand."

W-WORM. [See BLIND-WORM.]

G. (*Limax.*) A naked mollusc, of
er *Pulmonea*, family *Limacinæ*. The
n small gray Slug (*Limax cinereus*)
well known as a destructive pest in
dens to need much describing. It
rominent head, *with four tentacula*;
the end of the longer pair the eyes
ated. These tentacula can be drawn
inwards, by a process resembling the inversion of the finger of a glove. On the back there is a kind of shield or disc, formed by the mantle, and which covers the pulmonary sac; and the head can be partially con-

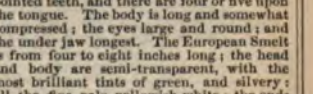
VARIEGATED SLUG.—(LIMAX VARIEGATUS.)

tracted or withdrawn beneath it. In the mouth is an upper jaw only, of a crescent form, and toothed, which enables it to devour with voracity herbs and fruits. The stomach is elongated, simple, and membranous. Its progress on the ground may easily be traced by the slime which it leaves in its track.

The BLACK SLUG, whose appearance in our fields and meadows in the summer season is considered as an indication of approaching rain, feeds on the leaves of different kinds of plants, and is in all respects except its size and colour, similar to the preceding.

Another species, called the TESTACELLA, (*T. haliotidea*), which feeds largely on earthworms, has the respiratory aperture, and the anus, near the posterior extremity; where their mantle, which is very small, is also placed, and contains a small ear-shaped shell which does not equal one tenth the length of the body. This animal is abundant in the south of France, and has been lately introduced into the gardens of this country, where it is said to be rapidly multiplying.

SMELT. (*Osmerus eperlanus.*) A small but delicious Malacopterygious fish, inhabiting the salt water about the mouths of rivers, and in its habits resembling the salmon. All parts of the mouth are armed with long and pointed teeth, and there are four or five upon the tongue. The body is long and somewhat compressed; the eyes large and round; and the under jaw longest. The European Smelt is from four to eight inches long; the head and body are semi-transparent, with the most brilliant tints of green, and silvery; all the fins pale yellowish white; the ends of the caudal rays tipped with black. The



SMELT.—(OSMERUS EPERLANUS.)

Smelt inhabits fresh water from August to May. After spawning in the beginning of April, they return to the sea. In August the fry are found about three inches long, swimming near the surface in shoals in the rivers, ascending and descending with the tide, when the adult fish are again visiting

The JAVA SNAKE. (*Coluber Javanicus.*) This Snake grows to the length of nine feet, and is principally seen in the rice fields of Java. The head is large and flat, and covered with large scaly plates: the mouth is furnished with double rows of teeth; but not being of a poisonous nature, it is destitute of fangs. From behind the eyes pass two deep-blue stripes to the upper part of the neck, where they unite: a third stripe of the same colour proceeds from the snout to the occiput, where it divides into two, and surrounds a yellow spot, marked with a few blue specks. The upper part of the body is divided, as it were, into squares resembling a kind of lattice-work, formed by stripes of bright blue with gold-coloured edges; the middle parts of the squares exhibiting changeable hues of gray, yellow, blue, and green: each side of the body is also marked with a row of white spots situated at the crossings of the blue stripes. It is altogether a superb species. It devours rats and other small quadrupeds, birds, &c.

The ÆSCULAPIAN SNAKE. (*Coluber Æsculapii.*) This is common in most of the warm parts of Europe, and is nowhere more frequent than in the neighbourhood of Rome: it is therefore not improbable to be the species peculiarly consecrated by the ancient Romans to the benevolent deity whose name it bears. It is nearly four feet in length, of a rufous colour on the upper parts, and marked on each side by a blackish longitudinal band: the scales on the sides, nearest the scuta, are white bordered beneath with black, thus forming a range of small whitish triangles along each side of the body. In its general habits it much resembles the *Coluber natrix* or Ringed Snake.—The following species are all natives of North America.

The BLACK SNAKE (*Coluber constrictor*) is found throughout the United States. The colour is black, inclining to slate colour beneath, with the throat and lips white. It grows to the length of six feet; the scales are smooth; and its motions are rapid.—

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and kept about
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SNIPE. (*Scol*
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three reddish or

and pale rufous: the tip of the tail is commonly of a pale reddish yellow; and the legs pale green. The Snipe frequents marshy places and wet meadows, and, in frosty weather, the edges of rushy hills, where it is almost constantly digging and nibbling in the soft mud. Their food consists of worms, insects, slugs, &c., which abound in such places. In these retreats, when undisturbed, the Snipe walks leisurely, with its head erect, and at intervals moving its tail. When disturbed, it usually springs, and takes flight beyond the reach of the gun, turning nimbly in a zigzag direction for two or three hundred paces, and sometimes soaring almost out of sight.

The Snipe, like the Woodcock, shuns the extremes of heat and cold, by keeping upon the bleak moors in summer, and seeking the shelter of the valleys in winter. In severe frosts and storms of snow, driven by the extremity of the weather, they seek the unfrozen boggy places, springy rills, or any open streamlet of water, and there they will sometimes sit till nearly trodden upon before they will take to flight. Although it is well known that numbers of Snipes leave Great Britain in the spring, and return in the autumn, yet it is equally well ascertained that many constantly remain and breed in various parts of the country; for their nests and young ones have been so often found as to leave no doubt of the fact. The female makes her nest (which is very inartificially composed of withered grasses and a few feathers) in some retired spot, generally under the stump of an alder or willow. The eggs, which are large and generally four in number, are pale-yellowish or greenish-white with rather elongated rusty spots at the big end. Sir Humphrey Davy describes the parent birds as exceedingly attached to their young, and says that if any one approach their nest, they make a loud and drumming noise above the head of the intruder, as if to divert his attention. The young birds run off soon after they leave the shell, but they are attended by their parents until their bills have acquired a sufficient firmness to enable them to provide for themselves. The Snipe is a very fat bird, but its fat does not cloy, and very rarely disagrees even with the weakest stomachs. It is much esteemed as a delicious and well-flavoured dish.

The JACK-SNIPE, or JUDCOCK, (*Scolopax gallinula*), in its figure and plumage very much resembles the Snipe; but it seldom exceeds two ounces in weight, or is above eight inches and a half in length. The bill is black at the tip, and light towards the base. A black streak passes over the head lengthwise; and another of a yellowish colour over each eye. The neck is white, spotted with brown and pale red. The scapulars and tertials are very long and beautiful; being bordered on their exterior edges with a stripe of yellow, and the inner webs streaked with bright rust colour on a bronze ground, reflecting shades of purple and green. The rump is glossy violet; *the abdomen* and rest white; *the tail dark brown, edged with rust colour; legs dull green. In its general* habits this bird resembles the common Snipe: it feeds upon the same kinds of food, lives and breeds in the same swamps and marshes, and conceals itself from the sportsman with as great circumspection, among the rushes or tufts of coarse grass. It differs, however, in this, that it seldom rises from its lurking place until it is almost trampled upon, and, when flushed, does not fly to so great a distance. It seldom abandons for any length of time the place it has once fixed upon; and though roused from it, and fired at repeatedly, perhaps, through the day, neither the noise nor any sense of danger seems to alarm it; and if we should seek for the little Judcock on the following morning, in all likelihood we should find it at its spring again.

SNOUT [MOTHS]. A name applied by collectors to various Moths, of the genera *Hypena*, *Crambus*, and *Cledeobia*.

SNOW-BUNTING. The *Emberiza Nivalis*. [See BUNTING.]

SNOW-GOOSE. [See GOOSE.]

SOLAN-GOOSE. [See GANNET.]

SOLDIER BEETLE. [See TELEPHORUS.]

SOLE. (*Pleuronectes solea.*) This well-known and much esteemed fish is most abundant on the sandy shores all round our coast, where it keeps close to the bottom, preying on the smaller testaceous animals, and the spawn and fry of other fishes. It is also an inhabitant of the Northern Baltic, Mediterranean, and American seas. The form of the body is a long oval, widest at a short distance behind the head, becoming gradually narrower and rather pointed towards the tail. It sometimes grows to the

SOLE.—(PLEURONECTES SOLEA.)

length of two feet, and to the weight of six or eight pounds: its general size, however, is much smaller. Its colour is obscure brown above, and white beneath; it is covered with small rough scales of an oblong form, each terminated by numerous spines, and very strongly fastened to the skin. The head is small; the eyes and mouth of moderate size; both jaws furnished with minute teeth on the under or white side of the fish only; the eyes small. Soles seldom take any bait, but are almost entirely taken by *trawling*. At Hastings, Brighton, and the great fishing station at Brixham in Torbay, and, indeed, nearly all along the southern and western coast of England, they are taken in great numbers. They are also caught on various parts of the Irish coast; and Mr.

cies just described, nor differing from it in any very important point. There is also the SOLESETTE or LITTLE SOLE (*Pleuronectes lingula*), considerable numbers of which are taken in the trawl nets off Brixham throughout the whole year; but from their diminutive size, they are generally thrown back into the sea.

SOLENIDÆ. The name given to a family of Molluscs, distinguished by the great length of their respiratory tubes. The *Solen*, or *Razor-shell*, is a well-known example. It has an elongated shell, the hinge being furnished with distinct teeth, and the ligament altogether external. The animal burrows in the sand sometimes to the depth of nearly two feet), into which it sinks rapidly on the approach of danger; and as it very rarely quits its hole, its movements are nearly limited to an ascent or descent in it. This it accomplishes by means of its foot, which it attenuates into a point when it is about to bore, and afterwards contracts into a rounded form, so as to fix it by its enlargement when it desires to rise. In places where they

RAZOR-SHELL.—(SOLEN VAGINA.)

abound, they are sought after as bait for fish, and are taken in the following manner. Although the Solen is an inhabitant of salt water, yet salt in its pure state appears to have an irritating effect upon the animal: the fisherman, therefore, having discovered its retreat, throws into the hole a small quantity of salt, which generally brings the creature to the surface, when he endeavours to grasp it firmly; to do which some address and quickness are required; but should he fail, and the animal make good its retreat, there is no other way to capture it than to dig it out of the sand: for it is either insensible to the additional irritation, or its instinct of self-preservation teaches it to

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courting the caresses of the hand that had inflicted the stripes, and asking him again to be received into favour. At the slightest look of encouragement, its joy at the reconciliation seems to know no bounds, and is expressed by the liveliest indications of delight, jumping and fawning upon the person of him who had just before been inflicting bodily pain and mental distress — capering round him, and barking loudly with ecstasy."

The SPRINGER is a small and elegant breed, generally red and white, with black nose and palate. In this elegant variety length of ears and a small head are essential points. — The WATER SPANIELS, large and small, differ only from the common Spaniel in the roughness of their coats, and in uniting the aquatic propensities of the Newfoundland Dog with the fine hunting qualities of their own race. — The beautiful breed known as King Charles's are highly prized for their diminutive size, length of ears, &c. [See LAP-DOG.]

SPARROW. The Common or HOUSE-SPARROW (*Pyrgita domestica*) the most familiar representative of the Finch tribe (*Fringillidæ*) is so constantly seen in the vicinity of our habitations, even in the midst of populous cities, that no person can be ignorant of its appearance or habits: although it must be admitted that, as seen in smoky towns, it is difficult to trace that agreeable variety in the plumage which distinguishes the male bird as it hops about among the ricks and mingles with the poultry in the farm-yard. This bird is nearly six inches in length, and of a robust form: bill dusky, eyes hazel; the top of the head and back part of the neck ash gray; the throat, fore part of the neck, and space round the eyes black; the cheeks whitish; the breast and all the under parts pale ash; the back, scapulars, and wing-coverts are reddish brown, mixed with black — the latter tipped with white, forming a light bar across the wing; tail brown, edged with gray, and rather forked; legs pale brown. The plumage of the female is plainer and duller than that of the male;

SPARROW.—(PYRGITA DOMESTICA.)

beyond each eye there is a line of white, and she has no black patch on the throat. Sparrows are bold and crafty; and their partiality to the vicinage of man does not originate from any social affection on their part, but because their chief subsistence is there most abundantly to be found. They follow society, and live at its expense: granaries, barns, court-yards, pigeon-houses, and all places, in short, where grain is scattered, being their favourite resorts. Their voracity is extreme; they are inconveniently familiar, and their incessant and monotonous note is fatiguing to the ear. But if Buffon's estimate be true that a pair of Sparrows will destroy about 4000 caterpillars weekly in feeding their young, there is good reason to suppose that they sufficiently repay the trivial damage they may cause either in the garden or the field. The Sparrow builds under the eaves of houses, in holes of walls, &c.; the nest being made of hay, and lined with feathers. The female lays five or six eggs of a reddish white, spotted with brown; and has generally three broods in the year.

The following characteristic observations on the habits of this well-known bird are from the pen of Mr. Knapp:—"A dispensation that exists throughout creation is brought more immediately to our notice by the domestic habits of this bird. The natural tendency that the Sparrow has to increase, will often enable one pair of birds to bring up fourteen or more young ones in the season. They build in places of perfect security from the plunder of larger birds and vermin. Their art and ingenuity in commonly attaching their nests beneath that of the rook, high in the elm, a bird whose habits are perfectly dissimilar, and with which they have no association whatever, making use of their structure only for a defence to which no other bird resorts, manifest their anxiety and contrivance for the safety of their broods. With peculiar perseverance and boldness they forage and provide for themselves and their offspring; will filch grain from the trough of the pig, or contend for its food with the gigantic turkey; and, if scared away, their fears are those of a moment, as they quickly return to their plunder; and they roost protected from all the injuries of weather. These circumstances tend greatly to increase the race, and in some seasons their numbers in our corn-fields towards autumn are prodigious; and did not events counteract the increase of this army of plunderers, the larger portion of our bread corn would be consumed by them. But their reduction is as rapidly accomplished as their increase, their love of association bringing upon them a destruction, which a contrary habit would not tempt." The common Sparrow is found in all parts of Europe, and almost throughout the eastern continent, supporting equally well severe cold and extreme heats. America is, however, free from it; but they have, in its place, the CHIRPING SPARROW, — a delicate bird, almost as familiar, but nowise intrusive.

The TREE SPARROW, or MOUNTAIN SPARROW (*Pyrgita montana*), is somewhat less than the common Sparrow: the bill is thick and black; the crown of the head and hinder part of the neck chestnut brown; sides of the head white; throat and auriculars black; the greater quills are black, bordered with rust-colour; the lesser coverts of the wings of a bright bay colour, spotted with black, and crossed with two white bars; breast and

riety of motions, whirling about, and jerking its tail upwards and downwards, like the Wagtail.

The White-throated Sparrow. (*Fringilla albicollis.*) Of all the Sparrows known in North America, Wilson says this species is the largest as well as the handsomest. From Connecticut to Savannah he found these birds numerous, particularly in the neighbourhood of the Roanoke river, and among the rice plantations. In summer they retire to the higher inland parts of the country, and also farther north, to breed; but during their residence in the above-mentioned localities, they collect together in flocks, always preferring the borders of swampy thickets, creeks, and mill-ponds, skirted with alder bushes and long rank weeds, the seeds of which form their principal food. The length of the White-throated Sparrow is six inches and a half, breadth nine inches; the upper part of the back and the lesser wing-coverts are beautifully variegated with black, bay, ash, and light brown; a stripe of white passes from the base of the upper mandible to the hind head; this is bordered on each side with a stripe of black; below this again is another of white passing over each eye, and deepening into orange yellow between that and the nostril; this is again bordered by a stripe of black proceeding from the hind part of the eye; breast, ash; chin, belly, and vent, white; tail, somewhat wedged; legs, flesh-coloured; bill, a bluish horn colour; eye, hazel. All the parts that are white in the male are in the female of a light drab colour.

The Hedge-Sparrow (*Accentor modularis*) is about the size of the Redbreast, and belongs to the family *Sylviadæ*. The beak is black, and rather long and slender; the head is of a deep brown hue, mixed with ash-colour; and the cheeks are marked with oblong spots of dirty white: the back and coverts of the wings are dusky, edged with reddish-brown; the quill-feathers and the tail are also dusky; the rump brown, tinged

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habits. I despaired of being able to trace its character satisfactorily, and I should probably have long remained in ignorance of it, had I not visited the southern parts of Europe. My arrival at Rome let me at once into the secret. The bird to which the repentant king of Israel compared himself in the seven penitential psalms is a real thrush in size, in shape, in habits, and in song; with this difference from the rest of the tribe, that it is remarkable throughout all the East for sitting solitary on the habitations of man. The first time I ever saw this lonely plaintive songster was in going to hear mass in the magnificent church of the Jesuits at Rome. The dawn was just appearing, and the bird passed over my head, in its transit from the roof of the palace Odescalchi to the belfry of the church of the Twelve Apostles, singing as it flew. I thought it had been the Italian blackbird, with notes somewhat different from those of our own; for its song was partly that of the blackbird, and partly that of the stormcock, but not so loud as the last, nor so varied as the first. I found out my mistake in due time; and, on seeing that the bird was the true Solitary Thrush, I paid particular attention to its habits. It is indeed a solitary bird, for it never associates with any other, and only with its own mate at breeding time; and even then it is often seen quite alone upon the house-top, where it warbles in sweet and plaintive strains, and continues its song as it moves in easy flight from roof to roof. It lays five eggs of a very pale blue. They much resemble those of our Starling. The bird itself is blue, with black wings and tail; the blue of the body becoming lighter when placed in different attitudes."

SPARROW-HAWK. (*Falco* [*Accipiter*] *nisus*.) This is a bold and spirited bird, but the most pernicious of the Hawk kind that inhabits Britain, making great depredations among pigeons, partridges, and the young of domestic poultry. The difference of size between the male and female is very disproportionate; the former measuring about twelve, and the latter fifteen inches. Individuals of this species also vary considerably in their colours: in some, the back, head, coverts of the wings, and tail, are of a deep bluish-gray, edged with a rusty red. The quill-feathers are dusky, barred with black on their exterior webs, and spotted with white on the lower part of the interior webs. On the tail, which is of a deep ash-colour, there are five broad black bars, and the tip is white. The breast and belly are of a cream-colour, with transverse bars at the base, of a deep brown in some, and orange-colour in others; and the skin at the base of the bill, the irides, and the legs, are yellow. The colours of the female are different from those of the male: the head, back, and coverts of the wings being browner, and the tail of a brighter dove colour; the waved lines on the breast more numerous, and the breast containing a greater portion of white. She builds her nest in *hollow trees, high rocks, or lofty ruins; sometimes in the old nest of a crow; and generally lays* four or five whitish eggs, spotted with red at the thicker end. Mr. Selby says that it occasionally makes its nest in low trees or thorn-bushes, that it is flat and shallow, and very similar to that of the ring-dove, but rather

SPARROW-HAWK.
(FALCO [ACCIPITER] NISUS.)

larger, and is composed of tender twigs. The Sparrow-hawk is found, in considerable numbers, in various parts of the world, from Russia to the Cape of Good Hope. This bird was held in great veneration among the ancient Egyptians, because it was made the emblem of their god Osiris. Among the Greeks it was consecrated to Apollo.

The AMERICAN SPARROW-HAWK (*Falco sparverius*) is a beautifully marked bird, belonging to the same subdivison which contains the *Kestrel*, and appears to reside principally in the warmer parts of the United States: they are found also in the West Indies, south of the Equator. The female is eleven inches long; the male not quite ten. The cere and legs are yellow; the head bluish ash; crown rufous. The upper parts are reddish-bay, striped transversely with dusky brown; the lower parts pale yellowish white, marked with longitudinal spots of brown: the claws black. The nest is built in a hollow, shattered, or decayed tree, at a considerable elevation. It lays four or five eggs, of a light brownish colour, and spotted with brown. It preys upon sparrows and other small birds, also mice, grasshoppers, and lizards; but it has been remarked that it will very seldom, if ever, eat of any thing which it has not itself killed.

Another species, called the COLLARED SPARROW-HAWK, (*Accipiter torquatus*), which is well known in Van Diemen's Land and New South Wales, has all the bold and daring characteristics of its European ally. The head and all the upper part of the plumage is a deep brownish gray, the tail indistinctly barred with deep brown, and on the back of the neck an obscure collar of reddish brown; the throat, breast, and thighs, rufous, crossed by numerous bars of white; under surface of the wings and tail gray, barred with brown; irides and eyelash yellow; cere green; bill lead-colour, the

tip black; legs yellow, slightly tinged with green.

SPARUS. The name given to a genus of Acanthopterygian fishes in the Linnæan system, the characteristics of which are—that the gill-openings are scaly; the mouth is furnished with strong cutting teeth; the grinders are obtuse, close set, and covered with lips; the branchiostegous membrane consists of five rays; the body is compressed; the lateral line is curved behind; and the pectoral fins are rounded. For an example of this genus, see GILTHEAD.

SPATANGUS, or HEART URCHIN. A genus of *Echinidæ*, common on many of our sandy shores. In this species the radiated form is considerably departed from, the shell being oval instead of round, and often much prolonged in one direction. Little is known of the habits of the *Spatangi*. They are almost always found buried in the sand, in which substance they seem to find enough nutriment (composed probably of the minute animals mingled therewith), their alimentary canal being filled with it. As they seem to be unable to bring their suckers into proximity with the mouth, they must derive their nourishment from the chance-supplies which the substances in contact with their mouths may furnish. Their whole organization is, certainly, adapted to this mode of existence; yet it is difficult to conceive how they can obtain the necessary amount of aliment, with so little power of either locomotion or prehension.

SPERMACETI WHALE. The common Cachalot. [See WHALE.]

SPHÆRIDIADÆ. A small group of Coleopterous insects, very similar in general structure to the *Hydrophilidæ*, but in their habits very different; since they frequent putrescent vegetable matter which has passed through the bodies of animals, the excrement of horses and cows being their chief abode, over which, when recently ejected, they may be seen hovering, and in which they burrow. The species of *Sphæridium* are the largest in

SPHÆRIDIUM SCUTELLATUM.

the family, not, however, exceeding a quarter of an inch in length; they are generally of a shining black colour, with the elytra variegated with large patches of red or dingy yellow. Seventy species or upwards are believed to occur in this country; most of these belong to the genus Cercyon, the characters distinguishing which are most frequently very obscure and unsatisfactory.

SPHEGIDÆ. A family of Hymenopterous insects, some inhabiting tropical climates, which are the largest belonging to the Order, and others noted for their varied and splendidly metallic colours. The body is long, with the abdomen often attached to the thorax by a peduncle; the collar laterally dilated, and extending as far as the wings; the antennæ long, and filiform or subsetaceous; the legs long, and in general fossorial; the mandibles are long, curved, and acute at the tips; and their sting is very powerful. They are exceedingly active and very restless in their motions, and may often be seen upon sand-banks, &c., running along with their wings in constant vibration.

SPHINGIDÆ. A family of *Lepidoptera*, called by the English name of Hawk-Moths, comprising the most robust and powerful insects in the order, and generally distinguished by their strength of flight and large size. The antennæ are prismatic, and terminated by a little feather or thread; the tongue is often extremely long, in some species even exceeding the whole body in length; the labial palpi are broad and compressed, and closely covered with scales; the labrum and mandibles are minute; the body is long, and acute behind; and the wings, especially the hinder pair, small. The caterpillars are naked, cylindrical, and sixteen-footed; they are ornamented with pale oblique stripes upon the sides of the body, and are usually furnished with a short horn on the back of the eleventh segment. They descend into the earth to become pupæ, which are naked and conical. Various modifications occur in the character of the imago in this family. The maxillæ vary considerably in length, exceeding that of the entire body in Sphinx, but scarcely exceeding that of the head in the Death's-head Hawk-moth (*Acherontia Atropos*), [See ACHERONTIA], and in *Smerinthus* not longer than the labial palpi; this variation in length corresponds with the rapidity of flight, and the habit of the insects of extracting the nectareous juices of tube-bearing flowers by means of their elongated tongue. The caterpillars of the typical species are remarkable for the attitude in which they are usually seen, and from which they have obtained the genuine name of *Sphinx*, from their supposed resemblance to the figures of that fabulous creature. Some of them are also remarkable for the faculty they possess of elongating and contracting the three anterior segments of the body, giving them somewhat of a proboscis-like appearance; whence they have been termed Elephant Sphinxes.

Although the Sphinxes in general are only seen on the wing in the twilight hour, this is not absolutely the case with all. Mr. Knapp, in his 'Journal of a Naturalist,' thus speaks of the HUMMING-BIRD HAWK-MOTH (*Macroglossa stellatarum*). "It frisks about all the summer long, and in very fine seasons continues with us as late as the second week in October. The vigilance and animation of this creature are surprising, and seem to equal those of its namesake, that splendid meteoric bird of the tropics, that winged

thought,' as some one has called it; though our plain and dusky insect can boast none of its glorious hues. Our little Sphinx appears chiefly in the mornings and evenings of the day, rather avoiding the heat of the midday sun, possibly roused from its rest by the scent, that 'aromatic soul of flowers' which is principally exhaled at these periods; delighting in the jasmine, marvel of Peru, phlox, and such tubular flowers; and it will even insert its long, flexible tube into every petal of the carnation, to extract the honey-like liquor it contains. Nature seems to have given this creature some essential requisites for its safety: its activity, when on the wing, renders its capture difficult; and when it rests it is on a wall, the bark of a tree, or some dusky body, that assimilates so nearly to its own colour as to render it almost invisible, though watched to its settlement. We sometimes see it enter our rooms, attracted by flowers in the open windows; but it seems to be immediately aware of its danger, disappears in an instant, and is safe from capture. Wild and fearful as this creature is by nature, yet continued gentle treatment will remove much of its timidity, and render it familiar to our presence. Perfectly free from any annoyance as they are when ranging from sweet to sweet on my borders, and accustomed to a close inspection of all their operations, I have frequently touched their wings with my fingers, while hovering over a flower, and dipping their long tubes into the corolla of a geranium: they would retire a little, confused with such freedoms and interruptions, but, experiencing no harm, they would return and finish their meal, unmindful of such petty annoyances. I have known this creature, like some other insects, counterfeit death when apprehensive of danger, fall on its back, and appear in all respects devoid of life when in a box; and, as soon as a fit opportunity arrived, dart away with its usual celerity."

In some species the extremity of the abdomen is elongated, and very acute, and in others broader, and furnished on each side with a brush. Some, again, have scaleless wings (*Sesia*), whence the smaller species have received the names of *Sesia fuciformis* and *S. bombyliformis*, in reference to their analogical resemblance to drones or *Bombylii*. These last mentioned species, as well as those with tufted abdomens, fly during the day, the latter thence obtaining the name of Humming-bird Hawk-moths; whereas the others fly during the twilight, darting about with the greatest rapidity, or hovering, hawk-like, in front of the flowers, from which they extract the nectar with the assistance of their elongated tongue.

As a striking and yet common example of this family we figure and describe

The Sphinx Ligustri, or Privet Hawk-Moth. Among the numerous Moths which make their appearance on fine summer evenings, we have no one that is more handsome, and scarcely one that is more common, than the *Sphinx ligustri*. It varies in the expansion of its wings from three and a half to nearly five inches. The fore wings are of an ashy colour, with the base pale, and slightly tinted with rose colour, and having a large dark patch along the inner margin, extending nearly from the base to the tip; while slender black lines run longitudinally between the veins of the wings; along the extremity of this dark patch runs a weaved ashy and black stripe, and a slender wavy white line running parallel with the outer margin. The hind wings are of a pale rosy colour, with three black bands, two of them long and broad, running parallel with the extremity of the wing: the fringe is uniformly grayish-brown. The hind part of the head and the sides of the thorax are of an ashy-white, but the back of the latter is

PRIVET HAWK-MOTH.—(SPHINX LIGUSTRI.)

black, posteriorly irrorated with gray: the sides of the abdomen are of a rich pink-red colour, interrupted by black bars, and with a broad dorsal ashy bar, along the middle of which runs a darker line. The under side of the body is a light dun colour, with a black line down the centre. The Caterpillar is green, with the caudal horn black above, and yellow beneath, and seven oblique stripes

CATERPILLAR AND CHRYSALIS OF PRIVET HAWK-MOTH.—(SPHINX LIGUSTRI.)

on the sides of purple and white: on each side of the head is a strong black mark, and the spiracles are orange. When first hatched the young Caterpillars have the tails remarkably long, and the bodies very rugose, but they become smooth at the final moulting. By the end of August or the middle of September they are full grown, and become of a dirty-red colour, when they descend into the earth, where they change into a dark brown chrysalis, with the extremity slightly bifid, and the tongue-case straight. The Moth

so peculiar that they are easily recognized. The body is composed of two pieces only, the head being united with the thorax; and the feet are always eight in number. Their cephalothorax appears as if composed of but a single segment, and is covered with a sort of horny buckler, generally oval, to which the abdomen, consisting of a soft and tumid mass, is appended. Generally they have eight eyes, though sometimes only six, variously disposed in the different genera, but always simple. The mandibles terminate in a very short movable hook, having near its extremity a small aperture, which serves as a passage for the poison. The legs are inserted almost in a circular manner around the cephalothorax; they are all nearly of the same form; and each is composed of seven joints, the last being armed with two hooks. The pulmonary sacs are placed near the base of the abdomen, and indicated externally by a brownish or whitish spot. They are now divided into groups or families, according to the arrangement of the mandibles and eyes, which corresponds very remarkably with their respective modes of life.

The Spider being formed for a life of rapacity, and incapable of living on any other than insect food, all its habits are calculated to deceive and surprise: it spreads toils to entangle its prey; it is endued with patience to expect its approach; and possesses power sufficient to destroy it when captured. For the purpose of constructing its web, Nature has supplied the Spider with a large quantity of glutinous matter within its body, and with five papillæ, or teats, for spinning it into thread. This substance is contained in a little bag, and at first sight resembles soft glue; but when more accurately examined, is found twisted into many coils of an agate colour; and, on breaking it, the contents may easily be extended into threads, from the tenacity of the substance — not from those threads being already formed. The machine by which wire is drawn will furnish us with some idea of the manner in which this creature forms the threads of its

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new thread at every turn, until, sometimes, the insect is completely coated, and it may be devoured at pleasure. Some Spiders spin an irregular web, consisting of threads intersecting each other at every angle: others, again, make a horizontal, closely-matted web, having a funnel-shaped retreat, into which they convey their prey: while others make only a retreat by binding a few leaves together, from which they sally forth and seize insects which approach them. Some of these

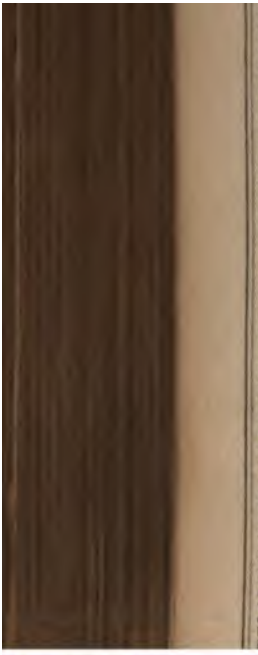
GARDEN SPIDER.—(EPEIRA DIADEMA.)

seem to be extremely venomous; for it is observed that no insect that has been once bitten by them, ever recovers, even though it be many times larger and more powerful than its adversary. Some are aquatic, and spin a cup-like web, which answers the purpose of a diving-bell, under which they disengage the air they bring down from the surface, and pass their lives feeding on aquatic insects. Some Spiders spin no web, but take their prey by running; others by approaching quietly till within a certain distance, when they suddenly leap upon their prey: other Spiders form perpendicular and cylindrical holes in the ground, into which they retreat on the approach of danger.

The female Spider generally lays nearly a thousand eggs in a season; which are separated from each other by a glutinous substance. These eggs are small or large in proportion to the size of the animal that produces them. In some they are as large as a grain of mustard-seed; but in others they are too minute to be distinctly visible. The female never begins to lay till she is two years old; and her first brood is never so numerous as when she arrives at full maturity. When the eggs have continued to dry for an hour or two after exclusion, the Spider prepares a bag for their reception, where they remain to be hatched till they leave the shell. For this purpose she spins a web four or five times stronger than that intended for the catching of flies. This bag, when completed, is as thick as paper, smooth on the inside, but somewhat rough without: in this the eggs are deposited; and nothing can exceed the concern and industry which the parent manifests in the preservation of it: by means of the glutinous fluid, it is stuck to the extremity of her body; so that, when thus loaded, she appears as if double. If the bag should happen by any accident to be separated from her, all her assiduity is employed to fix it again in its former situation; and this precious treasure she seldom abandons but with her life. When the young are excluded from their shells within the bag, they remain for some time in their confinement; till the female, instinctively knowing their maturity, bites open their prison, and sets them at liberty. But her parental care does not terminate with their exclusion: she receives them on her back from time to time; till having acquired sufficient strength to provide for themselves, they leave her to return no more, and each commences a web for itself. The young ones begin to spin when they are scarcely large enough to be discerned; and discover their propensity to a life of plunder before Nature has conferred on them strength for the conquest.

In Mr. Low's 'Sarawak' it is said that, "the Spiders, so disgusting in their appearance in many other countries, are in Borneo of quite a different nature, and are the most beautiful of the insect tribe. They have a skin of a shell-like texture, furnished with curious processes, in some long, in others short, in some few, in others numerous; but are found of this description only in thick woods and shady places. Their colours are of every hue, brilliant and metallic as the feathers of the humming-bird, but are, unlike the bright colours of the beetle, totally dependent on the life of the insect which they beautify; so that it is impossible to preserve them."

In the 'Excursions to Arran,' by the Rev. David Landsborough, we find an account of the persevering labours of an *Epeira*, "who had pitched his tent by the way-side," which, in our opinion, is sufficiently interesting to warrant us in extracting nearly the whole of it. "The Spider is in kings' palaces;" and kings and queens too may learn a lesson from it, and so, surely, may we. Spiders have not got justice done to them: they are a much more interesting race than many suppose. They improve on acquaintance: the better they are known, the more they are admired. At that time a whole colony of them were encamped by the road-side, within the compass of half a mile. "As he was rather a gigantic Spider, his tent, instead of being on the ground, was elevated, like the house of a giant of whom in early life we have all read. It was built on the tops of the common grass, *Holcus lanatus*, more than a foot above the ground. Had he built his house on the top of one stalk of grass, the house and its inhabitant might have borne down a single slender stalk. But he had contrived to bring together several heads whose roots stood apart, and, with cordage which he could furnish at will, had bound them firmly together, so that his elevated habitation was anchored on all sides. From



among the grass.

"During my visit in June last, I was anxious, as we returned from Whiting Bay, to ascertain whether this interesting colony of tent-makers was still in a thriving state; and not seeing any at first, I began to fear that a Highland clearance had taken place. When I at last discovered a few of them, I saw that, as there are times of low trade among our industrious two-footed artizans in towns, so are there occasionally hard times among our six-footed operatives in the country. The field in which they encamped had, I suppose, been overstocked. The stately *Holcus* had been eaten down; but these shifty children of the mist had availed themselves of the heather—doubling down the tops of some of the heath-sprigs, and under this thatched canopy forming their suspension-tabernacles. As yet, however, it was too early in the season. The house had only one apartment; the web of which it was formed was as yet thin, so that through it I could see the Spider, which being but half grown, had not yet got in perfection its fine tiger-like markings. 'Go to the ant, thou sluggard;' go also to the Spider. He who taught the one taught the other; and, learning humility, let both teach thee.

"I said that kings might learn of the Spider; and one of the greatest of our Scottish kings, some five hundred years ago, disdained not to learn of an Arran Spider in the very district in which this Spider is found. The tradition still lingers in Arran, that King's-cross-point was so named, because from this point in Arran, King Robert the Bruce sailed for Carrick, his own district in Ayrshire. When he was, by a train of adverse circumstances, almost driven to despair, it is said that after a sleepless night, in a humble cot on this rocky point, he in the morning observed from his lowly bed a Spider actively employed in weaving her silken web. To make it firm and extensive, she endeavoured to fasten her filmy threads on a beam projecting from the roof, but in attempting to reach this beam she fell down to the

free."

As we have already s
very numerous; some di
others; but the space we
pied compels us to confi
present instance, to the
we have already given
habits, &c. One particu
the history of Spiders re
which is their power of fl
exercised by those of
principally in the autumn
diminutive adventurers
contribute to fill it with t
ing cobwebs which are
spicuous at that period o
inclined to make these a
Spider ascends some sligh
top of a wall, or the bra
turning itself with its hea
darts out several thread
and, rising from its static
the gale, and is thus car
height of the loftiest tow
flight it is probable th
themselves in catching s
insects as may happen to
gress; and when satisfied
and their prey, they suffo
by contracting their lim
disengaging themselves f
supports them.

"We read in various w
Kollar, "that Spiders of
poisonous juice, in conse
joints become inflamed
even that the crawling of
to cause inflammation in
touches. It might perh
contradict the assertion
but I have never found
adduced by men who ha
occupied with the study
I ever experienced any
myself throughout the m
I have been engaged in s
spiders. All Spiders are,

mce of the wound, and the corrosive
mmunicated to it; the wounded part
g inflamed, and swelling. The larger
er, the warmer the climate or season
rear, and the more susceptible the
l individual, so much worse will the
; and it is therefore no wonder that
who would have a fester from a simple
th a needle, should feel more violent
om the bite of a Spider. Thus the
the Tarantula in southern Italy,
Apulia, according to late observa-
said not to be nearly so dangerous
considered formerly, and the dis-
ibuted to the bite of the Tarantula
to be more the consequence of the
and manner of life of the people.
owever, an indisputable fact that
defend themselves when they are
ed and captured, bite with their
d drop into the wound a more or
omous juice, although the conse-
are very seldom dangerous."

PIDER. There is a small Tick, so com-
alled the Red Spider (*Acarus tela-*
it may be described here. It is
visible to the naked eye, and does
able injury to various plants in warm
rners. It is also called the Plant
like most of the *Arachnida*, it has
gs; its colour changes from yel-
o brown and reddish, and on each
e back is a blackish spot. In the
r it usually attacks kidney-beans.
trees, the young limes principally
d the Mites are found in thousands
under side of the leaves. These
ssume a dirty yellow or brownish
ce, and in the middle of summer
acquire an autumnal hue. In hot-
e Red Spider feeds during the whole
d is a great pest to nurserymen and
s. It spins a sort of web over the
particularly on the under surface,
s the juice of the plants with its
which completely enfeebles and
e them. Vincent Kollar says that
ly sprinkling the plants with cold
e been found efficient as a means of
ng these insects; fumigating the
e repeatedly with strong tobacco
lso injures them in some degree.
e most abundant when the plants
too warm in summer; and as most
e plants thrive well when placed in
air in July and August, placing
will almost entirely free them from
ects. When hot-house plants are
the open air, the precaution must
of sinking the pots in a warm dung
ed to keep the roots warm. The
ng preserved in this way, the plants
the coldest weather they are ever
o be exposed to in summer. For
beans that are trained on sticks in
air, it is necessary in autumn and
o cleanse the sticks from all loose
the Mites take up their winter
within it, in whole families, and if
not destroyed, proceed *from it to*
ng plants the ensuing spring. The
f Spiders by the Baron Walckenaer
that has yet been published.

SPIDER MONKEY. (*Ateles.*) The species belonging to this genus of the Quadrumana are called Spider Monkeys, from their long slender limbs, and sprawling

BLACK SPIDER MONKEY.—(ATELES ATER.)

movements. They exhibit some remarkable resemblances to the human conformation in their muscles, and, of all animals, alone have the biceps of the thigh like that of a man. They accordingly make little use of their fore-hands in progression. Their colours are chiefly or wholly black, or fulvous-gray; face black, or flesh-coloured. They are gentle and confiding, and capable of much attachment.

SPIRULA; SPIRULIDÆ. A genus and family of Dibranchiate Cephalopods. According to the judgment of J. E. Gray, Esq., of the British Museum, "there is every reason to believe that the Spirula is the nearest recent ally of the *Ammonites*, so abundant and so numerous in kinds, found in the different fossiliferous strata." "The animal," Mr. Gray observes, "has all the general external characters of the cuttle-fish; that is

SPIRULA; WITH THE ANIMAL.

to say, it has a large distinct head with eyes on each side, eight short conical arms with series of small discs on the inner side, two long arms with elongated peduncles, and a bag-like mantle with a process in the middle above, and one on each side of the anal tube below; but it differs from the cuttle-fish in being entirely destitute of any fins, being rather compressed behind, and showing in the specimen under examination a part of the whorls of the shell above and below; but from the ragged edges of the skin it appears as if this shell was covered with a skin when the animal is alive, and that the exposure of

the surface of the shell has only been caused by the contraction of the animal, and especially of the skin over the shell, from the animal having been placed in very strong spirits when caught. * * * The mantle is free from the body on all sides at its oral edge, and without any cartilaginous ridges; this edge is formed into a point on the centre of the dorsal aspect, and into two mesial processes, one situated on each side of the anal funnel on the ventral side; the funnel is quite free from the mantle. The part of the shell which is exposed is covered with minute rugosities and indistinct reticulations, somewhat like the surface of a cuttle-fish bone.

"The examination of this animal (continues Mr. G.) confirms me in the opinion which I expressed in the 'Synopsis of the British Museum' (1840, p. 149.), that the *Ammonites*, from their texture and the small size of the last chamber, are internal shells, and should be arranged with the Decapodous Cephalopods, being chiefly distinguished from the *Spirulæ* by the siphon being always on the dorsal margin of the whorls, and the septa being foliated on the edge. I am aware that this opinion is not in conformity with the ideas of many zoologists and comparative anatomists, for Mr. Owen, in the last arrangement of these animals (Todd, Ency. Comp. Anat.), though he places the *Spirulæ* with the *Dibranchiate* Cephalopods, places the *Ammonites* with *Tetrabranchiata* next to *Nautilus*, with the following character, "animal unknown, presumed to resemble the *Nautilus*."

SPONDYLUS. A genus of Mollusca, for the most part inhabiting a rough and foliated bivalve shell, with spines and plaits; the valves closely united by two strong teeth. Like the Pectens, the margins of the mantle of the animal are garnished with two rows of tentacula, and in the outer row there are

SPONDYLUS AMERICANUS.

several terminated with coloured tubercles: in front of the abdomen is a broad radiated disc with a short pedicle, capable of contraction and elongation; and from its centre there hangs a thread terminated with an oval mass, the use of which is unknown. They live at great depths in the sea, and attach themselves to corals, &c. They are also frequently found adhering to anchors, cannons, and other iron articles that have been for some time at the bottom of the sea. Many of the species are very beautiful, and

of very vivid colours, such as h
pink, and yellow, or orange. So
species of Spondylus, as the w
(*Spondylus varius*), form a series of
by secreting successive layers of
shell at a distance from each ot
genus is included in the Ostraceans
the *Acephalous Testacea*, by Cuv
Spondyli are eaten like Oysters
form of their shells is generally m
the surface of the objects on which
They are found in the Indian C
Mediterranean, and on the Americ

SPONGE. (*Spongia.*) A cellul
tissue, or reticulated porous substa
adhering to rocks, and produced
Polypi, — animals almost imp
small, — which live in the sea. T
is covered in its recent state with
thin coat of animal jelly, suscep
slight contraction or trembling
touched — its only symptom of
After death this soft gelatinous m
appears. Every coast, from the E
the highest Polar regions, furnis
species of Sponge; but they exist

SPONGIA OCULATA; WITH ONE OF T
AND TWO SPICULÆ MAGNIFI

greater abundance in warm latit
in cold, and they attain also a mu
size. "There are certain forms of
tion," observes Mr. Rymer Jones, "
allied to both the animal and the
kingdom, that it is difficult to say
in which they ought to be inclu
are the Sponges, which, although
mon consent admitted into the ani
will be found to be excluded,
every point of their structure, fro
definitions of an animal hitherto
What is an animal? How are
tinguish it as contrasted with a mi
vegetable? The concise axiom of
upon this subject is well known,
grow; vegetables grow and live;
grow, live, and feel.' The cap
feeling, therefore, formed, in the
Linnæus, the great characteristic
the animal from the vegetable
yet, in the class before us, no ind
sensation has been witnessed; cont
ever rude, excites no movement, o
tion which might indicate its wha

ture has ever elicited from them an
tion of suffering; they have been
d with forceps, lacerated in all direc-
bored with hot irons, and attacked
he most energetic chemical stimuli,
t shrinking or exhibiting the remotest
nce of sensibility. On the other
n the vegetable world we have plants
apparently *feel* in this sense of the
The sensitive plant, for example,
droops its leaves upon the slightest
would have far greater claims to be
ered as being an animal than the
s, of which we are speaking."
have thought proper to introduce the
ng quotation, there being no point of
e in natural history which has been
ften or more fiercely contested than
e nature of sponges. That the animal
getable organizations both terminate
ety toward the inorganic structures of
n, and that in this approach to their
on boundary they touch and melt into
ther at more than one point, must be
s to all who have given the subject
ghtest consideration; and it cannot
dered at that in this instance, where
es of demarcation are so indistinct,
nt reasoners have come to different
sions. Thus we find Dr. Johnston,
nits them in his work on British Zoo-
asserting that they have no animal
re or individual organs, and exhibit
function usually supposed to be cha-
stic of the animal kingdom. "Like
ples," he says, "they are permanently
like vegetables, they are non-irri-
their movements, like those of vege-
are extrinsical and involuntary; their
ent is elaborated in no appropriated
ve sac; and, like cryptogamous vege-
r algæ, they usually grow and ramify
e determined by local circumstances,
they present some peculiarities in the
f the imbibition of their food, and in
erations, yet even in these they evince
er affinity to plants than to any ani-
whatever."
all know that the common Sponge is
up of horny, elastic fibres of great
y, united with each other in every
e direction, so as to form innume-
nals, which traverse its substance in
ctions; and to this structure it owes
ful properties, the resiliency of the
ompossing it making them, after com-
, return to their former state. But
rincipally to the observations of Dr.
which have been confirmed by other
lists) that we owe the elucidation of
l character of the spongy structure,
its vital action. The dried sponge is
e skeleton of the living animal: in
inal state, before it was withdrawn
r native element, every filament of
tance was coated over with a thin
glairy semifluid matter, composed of
ded transparent globules, which was
ng part of the sponge, secreting, as it
d itself, the horny *fibres which are*
ed in it. *When Sponges are ex-
in their living state and natural
, a constant and rapid stream of* water is seen to issue from the larger orifices or vents. This stream is made apparent by the movement of the minute particles contained in it, and by the disturbance of those which may be floating in the surrounding fluid. On the other hand, it is easily made apparent that water is as constantly being imbibed through the minute pores; and that, after traversing the smaller cavities of the spongy structure, it finds its way into the canals through which it is expelled. No cause has been assigned for this movement, nor is it easy to assign any: no cilia have been discovered; and the tissues are possessed of so little contractility, that it is difficult to suppose the fluid propelled through the tubes by any mechanical influence on their part. That the nutrition and growth of the Sponges depend on the water which enters the pores, and on the minute substances it holds in solution, appears evident. And not only does this circulation of fluid answer the purposes of nutrition, but it is subservient also to the process of excretion. On watching the currents of water that issue from the vents, it is observed that minute flocculent particles are incessantly detached and carried out by them. "The growth of the Sponge is thus provided for; the living gelatinous matter continually accumulates, and, as it spreads in every direction, secretes and deposits, in the form peculiar to its species, the fibrous material and earthy spicula which characterize the skeleton." From this description of the structure of a Sponge it will be apparent that all parts of the mass are similarly organized; a necessary consequence will be, that each part is able to carry on, independently of the rest, those functions needful for existence. If, therefore, a Sponge be mechanically divided into several pieces, every portion becomes a distinct animal.

"The multiplication of Sponges, however," as is observed by the author before quoted, and to whose able work we again refer, "is effected in another manner, which is the ordinary mode of their reproduction, and forms a very interesting portion of their history. At certain seasons of the year, if a living Sponge be cut to pieces, the channels in its interior are found to have their walls studded with yellowish gelatinous granules, developed in the living parenchyma which lines them; these granules are the germs or gemmules from which a future race will spring; they seem to be formed indifferently in all parts of the mass, sprouting as it were from the albuminous crust which coats the skeleton, without the appearance of any organs appropriated to their development. As they increase in size, they are found to project more and more into the canals which ramify through the Sponge, and to be provided with an apparatus of locomotion of a description which we shall frequently have occasion to mention. The gemmule assumes an ovoid form, and a large portion of its surface becomes covered with innumerable vibrating hairs or cilia, as they are denominated, which are of inconceivable minuteness, yet individually capable of exercising rapid movements, which produce currents

in the surrounding fluid. As soon, therefore, as a gemmule is sufficiently mature, it becomes detached from the nidus where it was formed, and whirled along by the issuing streams which are expelled through the fecal orifices of the parent, it escapes into the water around. Instead, however, of falling to the bottom, as so apparently helpless a particle of jelly might be expected to do, the ceaseless vibration of the cilia upon its surface propels it rapidly along, until, being removed to a considerable distance from its original, it attaches itself to a proper object, and, losing the locomotive cilia which it at first possessed, it becomes fixed and motionless, and developes within its substance the skeleton peculiar to its species, exhibiting by degrees the form of the individual from which it sprung." The uses to which the Sponges of commerce are applied are various and well known. They are usually prepared before they come to the market, by being beaten and soaked in dilute muriatic acid, with a view to bleach them, and to dissolve any adherent portions of carbonated lime. Dr. George Johnston, of Berwick-upon-Tweed, has published a work on the British Sponges, which is illustrated with engraved figures of all the species. This admirable book is indispensably necessary to any one who would study the subject of this interesting and much disputed class of animals.

SPONGE-CRAB. [See Dromia.]

SPOONBILL. (*Platalea.*) A genus of Grallatorial birds, of which the two best known species are the *White* and the *Roseate Spoonbill*; the former appearing to be a general inhabitant of the Old Continent, and the latter of the New. In their general structure and habits they are allied to the Storks and Herons; but their beak, from which their name is derived, is long, flat, and broad throughout its length, widening and flattening more particularly at the end, so as to form a round spatula-like disc.

The White Spoonbill (*Platalea leucorodia*) is about two feet six inches in length; its beak is eight inches and a half, and dusky, with several undulated transverse ridges of black, and the tip of an orange-yellow. The feathers at the back of the head form a beautiful crest, which is of a yellowish colour. The whole of the plumage is of a pure white, except the lower part of the neck, which is yellowish buff; the naked space round the eyes and on the throat pale yellow; the base of the latter part slightly tinged with rufous. The Spoonbill frequents the borders of rivers and sea-coasts, migrating with the Herons and Storks; but in England it is now scarcely ever seen. The nest is placed on a high tree near the sea-side, where the female lays three or four white eggs, generally marked with a few pale red spots: during breeding-time this bird is very clamorous. It feeds upon small fish, frogs, snails, and aquatic insects: the flesh is high-coloured when dressed, and is said to have the flavour of a goose. The trachea is curiously formed, having a double flexure, like

White Spoonbill.
(Platalea leucorodia.)

the figure 8, but the convolutions cross each other, the points of contact united by a fine membrane.

The Roseate Spoonbill (*Platalea ja*) is a most elegant species, two fe inches in length: the beak, six i length, and marked all round with parallel to the margin, is of a grayi and slightly transparent, showing th cations of its blood-vessels: the fore throat are naked, and whitish. The is of a fine rose-colour, deepest on th the tail coverts crimson: the legs a claws dusky. It inhabits Guiana, and other parts of America; and are very similar to those of the whit

Mr. Edwards, in his 'Voyage up t zon,' alludes to this species as be abundant in that wildly magnifice and as excelling (with the scarlet ib he names with it) all the water-bir geousness and delicate colouring roseate Spoonbills," he adds, "do not as do the ibises, being quite confin the whole coast, and sometimes le far up the Amazon in summer. Th roseate of their general colouring. rich lustrous carmine of their shou breast-tufts, as well as the singular of their bills, render them objects interest as well as beauty. They fishing for shrimps and other small along the edges of the water, or in left exposed by the ebbing tide, and eat, grind the food in their mandibl laterally. As well as the ibis, they ceedingly shy at every season exc breeding. They breed in the sam with the scarlet ibises and wood ib the nests of the three resemble ea in every respect but in size. The the Spoonbill are from three to fo white, and much spotted with brow

Sprat. (*Clupea sprattus.*) Th so much allied to the Herring, in

except in size, as to be frequently mistaken for its young: its distinctive characters are, however, sufficiently evident on examination. The chief difference consists in the abdomen, which in the Sprat is more strongly serrated: the back fin is also placed farther from the head than in the Herring, and the under jaw is longer than the upper: the tail is deeply forked; the scales are large, round, and deciduous; the upper part of the head and back dark blue, with green reflections passing into silvery white on the sides and belly. In length a full-sized Sprat measures six inches, and nearly an inch and a quarter in depth. These fish are taken in considerable numbers on our coasts, particularly the southern and western; and though not so valuable as Herrings, their coming into the market in immense quantities and at a very moderate price immediately after the Herring season is over, they prove very useful as a cheap and agreeable food during the winter months. The fishing season begins early in November; and in dark, foggy nights, especially, large shoals are often taken. So great, indeed, is the supply occasionally, that many thousand tons are in some seasons sold to the Kentish hop-growers and farmers for the express purpose of being used as manure.

SPRINGBOK, or SPRINGBUCK. (*Antilope Euchore.*) Few Antelopes are more entitled to our notice than the graceful Springbok, whose name is derived from the extraordinary perpendicular leaps it makes when alarmed, or as it scours the plain. These animals are gregarious, and nothing is more remarkable than their habits of mi-

SPRINGBOK.—(ANTILOPE EUCHORE.)

gration. The vast wilds in the interior of South Africa, which they inhabit in almost incredible multitudes, are subject to seasons of such excessive drought that not a green leaf or a blade of grass is visible. When this scene of barrenness occurs, myriads of Springboks make their way towards the fertile cultivated districts, which they literally inundate, to the great dismay of the colonist, who is compelled to drive his flocks and herds to a distant pasturage while the work of desolation is going on. They *continue in the neighbourhood of the Cape for two or three months; when the rainy season has* set in they return in troops of many thousands, covering the extensive plains for several hours in their passage. But their migrations are not made with impunity: lions, hyænas, and other beasts of prey make great havoc in their ranks; and the gun of the colonist is used with unerring aim. Several English travellers have witnessed and described these extraordinary marches, among whom is Mr. Pringle, who says that he once passed through one of these migratory hordes, near the Little Fish river, which whitened, or rather speckled, the country as far as the eye could reach; and he estimates the numbers at one time in view, at not less than 25,000 or 30,000. The general colour of the Springbuck is a light yellowish brown; the sides and belly divided by a broad band of chestnut, which runs down part of the shoulders; the upper part of the tail is white, the lower black; and from the tail some way up the back is a stripe of white, expansible at pleasure. When taken young the Springbuck is easily tamed, and displays the confident sportiveness of a goat.

SQUALUS; SQUALIDÆ. A genus and family of cartilaginous voracious fishes. [See SHARK.]

SQUATINA. [See ANGEL-FISH.]

SQUILLA; or MANTIS CRABS. A genus of Crustacea, belonging to the order *Stomapoda*. Its carapace only covers the anterior half of the thorax; the hinder being formed of rings like those of the abdomen. It is provided with enormous claws, terminating in a sharp hook; the last joint furnished with six sharp projecting spines, and the preceding joint with three, and so hollowed

SPOTTED MANTIS-CRAB.
(SQUILLA MACULATA.)

as to render this claw a most efficient instrument of prehension; bearing a considerable resemblance to the fore legs of the orthopterous genus *Mantis:* hence the more popular name applied to the species of this genus. The other foot-jaws, and the three anterior pairs of thoracic members, share in this conformation, and serve to hold the prey against the mouth. The three posterior pairs of legs, which are attached to the annulated portion of the thorax, are furnished with a brush instead of a hook at their extremities, and more resemble the abdominal swimming-legs. The tail is expanded into a broad fin. By the nature of its conformation we see that this animal is adapted both for seizing and holding its prey, as well as for swimming, but not at all for walking.

SQUIRREL. (*Sciurus.*) A genus of Rodent mammalia, characterized by the lower incisors being very compressed, and the tail long and bushy. From this latter member being turned over its back when the animal is in a state of rest, the genus has derived its scientific name, *sciurus* (*skia*, a shade, and *oura*, a tail), of which the English is only a corruption. The fore feet have four toes, with a trace of an anterior thumb; the hinder feet have five distinct toes: there are four molars to each jaw, and a very small additional one in front, which soon falls. The head is large, the eyes prominent: they are active animals, ascending trees with facility. Their beauty and extreme neatness combined with their light and graceful motions have made them general favourites.

The COMMON SQUIRREL (*Sciurus vulgaris*) is completely formed for an arboreal life; and its tail is extremely long, beautiful, and spreading. Its general length from the nose to the tip of the tail is about fifteen inches. The ears are terminated by long tufts of hair; the colour of the head, body, tail, and legs, is a bright reddish brown; the belly and breast are white; the eyes large, black, and sparkling; the fore feet strong, sharp, and well adapted to hold its food; the legs short and muscular; the toes long; and the nails sharp and strong. The upper lip is cleft; the fur short and silky; there are four molar teeth on each side of the lower jaw, and five in the upper, the first of which is only a small tubercle; and the incisors are two in each jaw. When on the ground, they move by successive leaps, with the tail extended and undulating; when sitting, the tail is elevated over their backs like a plume; but the forest is their home, and they display wonderful agility in leaping from bough to bough. The Squirrel lives upon nuts, acorns, beech-mast, the bark of young trees, leaf-buds, and tender shoots. Like the hare and rabbit, it generally sits on its hinder legs, using its fore paws to convey its food to the mouth. It is most provident in laying up its winter stores, not merely in one place of safety, but in several holes of trees, in the immediate neighbourhood of its own retreat; and there vast magazines of nuts and acorns are to be found in that dreary season when the trees are divested both of their fruits and foliage. The Squirrel's nest is constructed with great art, of moss, twigs, and dry leaves, curiously interlaced, and usually placed either in the hollow of a tree, or in the fork between two branches, where it is well defended from the weather, and can be least easily discovered. Here, generally in May or June, the little animal brings forth its young, the young family rarely consisting of more than four or five. The Squirrel never appears in the open fields, but keeps among the tallest trees, and avoids as much as possible the habitations of men. It is so extremely vigilant, that if the tree in which it resides be only touched at the bottom, it instantly takes the alarm, quits its nest, leaps to another and another tree, and thus travels on till it finds itself in perfect security; and it returns to its home by similar arboreal paths, unattainable by any other quadruped. Their agility is such that it is a very difficult thing to shoot a Squirrel in motion. "They have been seen, when hard pressed, and when the distance to the next tree has been beyond their most extravagant leaps, to throw themselves off, spreading abroad their limbs so as to make their body as parachute-like as possible to break their fall; and on reaching the ground without harm, bound along for the few intervening paces, and ascend the tree with a celerity almost too quick for the eye to follow." The Common Squirrel inhabits Europe, North America, and the northern and temperate parts of Asia. In Sweden and Lapland the colour changes to gray in the winter season; in Siberia it is often seen entirely white; and even in this country some slight variation in the colour is observable; sometimes, indeed, it is found with the tail milk-white, all the other parts being of the usual colour. When in captivity the Squirrel may be said to be always in motion.

The GREY SQUIRREL (*Sciurus Carolinensis*) is extremely common in North America, especially in oak, hickory, and chestnut forests. Formerly it was so abundant in many districts as to become a scourge to the inhabitants. Its colour is usually a fine bluish-gray, mixed with a slight tinge of orange, and the tail is edged with white. It is a small species, remarkable for its beauty and activity, and when kept in confinement is exceedingly playful and mischievous.

The FOX SQUIRREL (*Sciurus vulpinus*) is a large species, and inhabits, exclusively, the pine forests of the Southern States of America. The body is fourteen inches in length, and the tail sixteen. The colour is gray and black, or mottled.

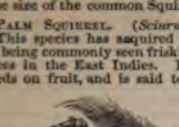
The CAT SQUIRREL (*Sciurus cinereus*) is distinguished by the fineness of the texture of its fur. The length of the body is twelve inches, and of the tail fourteen; the colour cinereous above, and white beneath; the tail is less distichous than in the others, and striped with black. It has four molar teeth only on each side of the upper jaw.

The RED SQUIRREL, or HUDSON'S BAY SQUIRREL, (*Sciurus Hudsonius*), is a beautiful species, inhabiting the pine-forests of Hudson's Bay and the Northern States of America. It is marked along the middle of the back with a ferruginous line from head to tail; the sides are paler; and the belly is of a pale ash-colour, mottled with black. The tail, which is neither so long nor so bushy as that of the common kind, is of a ferruginous colour, barred with black; and towards the tip has a broad belt of the same colour. In size it is somewhat less than the European Squirrel.

The BARBARY SQUIRREL. (*Sciurus pelatus.*) This is a native of Barbary and other parts of Africa, living usually in palm trees. It has full black eyes, with white orbits; the head, feet, body, and tail, are clearness, inclining to red; the sides are [illegible]

marked with two white stripes; the belly is white; and the tail, which is bushy, is regularly marked with shades of black. It is about the size of the common Squirrel.

The Palm Squirrel. (*Sciurus palmarum.*) This species has acquired its name from its being commonly seen frisking about palm trees in the East Indies. It principally feeds on fruit, and is said to be very



Palm Squirrel.—(Sciurus palmarum.)

fond of the palm wine, which is extracted from the cocoa trees. The female lays her young in the holes of old walls. This species is not unfrequently brought alive to this country.

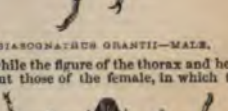
The Plantain Squirrel. (*Sciurus bilineatus.*) This pretty species is a native of Java, and is constantly kept by the Javanese as a pet. One which Mr. Adams obtained when visiting that country in the Samarang, he describes as "an amusing little animal, full of frolic, and as playful as a kitten. He never carried his tail over his back, like the greater number of his congenerals, but would trail it gracefully along the ground. When angry, he would dilate this ornamental appendage, and bristle up the hairs, like an irritated cat. His natural cry was a weak chirping sound, but when teazed beyond his powers of endurance, he would make a sharp, low, and passionate noise. He seemed to court caresses, and would receive them with pleasure. His food consisted of bananas and cocoa-nuts, which he would usually nibble like a rat, though sometimes he would place it between his paws. He was a remarkably cleanly little creature, continually dressing his fur in the manner of the *Felinæ*. When he slept, he rolled himself up like the dormouse, with his tail encircling his body. Always active and blithe, he would sometimes perform feats of extraordinary agility, bounding to great distances, and clinging to every object within his reach."

Stag. [See Deer, Red.]

Stag-beetle. In the article Lucanus we have entered at some length on a description of the most common genus of the *Stag-beetle*. We may here refer our readers to two or three of the most remarkable genera of exotic *Lucanidæ*. In Australia we find the genus *Lamprima*, in which the prevalent colouring is metallic green; the mandibles are short, and clothed with hairs on the inside. In New Zealand occurs the *genus Dendrobius, which at first sight resembles a small species of Dynastes.* In *South America we meet with the* genus *Pholidotus*, in which the body is covered with scales. On the island of Chiloe the truly remarkable genus *Chiasognathus* occurs, in the male of which the mandibles are longer than the body, bent down towards the tip, where they are reflexed; on their under side, at the base, there is a long horn. Our figure will illustrate the form of this curious insect better than the longest description; that with the long jaws shows the

Chiasognathus Grantii—male.

male, while the figure of the thorax and head represent those of the female, in which the



Head and thorax of female (C. Grantii.)

mandibles are very short. Another curious genus allied to this is *Sphænognathus*, a native of Columbia.

Staphylinus: Staphylinidæ. A genus and family of Coleopterous insects. They have in general the head large and flat, strong mandibles, antennæ short, the thorax as broad as the abdomen, the elytra truncate at the tip, but still covering the wings, which are of ordinary size. The species are usually found under dead leaves, stones, dung, &c. Our figure represents the *Staphylinus* (*Ocypus*) *olens*, a large and characteristic species of the family, which is very common in this country, and by many known familiarly as the "Devil's Coach Horse."

Staphylinus olens.

rocky and weedy pools between tide-marks. They are about eight inches in length, and of an elliptical form or pear-shaped, formed by matting together the branches of some common *fucus*, as, for example, the *fucus nodosus*, with various confervæ, alvæ, the smaller Florideæ, and corallines. These are all tied together in one confused compact mass, by means of a thread run through, and around, and amongst them in every conceivable direction. The thread is of great length, as fine as ordinary silk, tough, and somewhat elastic; whitish and formed of some albuminous secretion. It is evident that the fish must first deposit its spawn amid the growing fucus, and afterwards gather its branches together around the eggs, weaving and incorporating at the same time all the rubbish that is lying or floating around the nucleus. They were narrowly watched for some weeks, and it was observed that the same fish was always in attendance upon its own nest. During the time of hope and expectation, they become fearless, and will allow themselves to be taken up by the hand repeatedly. There can be no doubt that their object in remaining near the nest is to guard it against the attacks of such animals as might feel inclined to prey upon its contents.

STILIFER. A genus of Molluscous animals, one of which was discovered by Arthur Adams, Esq., of H. M. S. Samarang, living on the body of a starfish (*Asterias*) on the coast of Borneo. It has two elongate subulate tentacles, with the eyes sessile near the outer side of their base, and a small rounded head. The mantle is entirely enclosed and covered by the thin shell, and the foot is narrow, slender, very much produced beyond the head in front, and scarcely extended at all behind.

STIPITURUS, or SOFT-TAILED FLY-CATCHER. (*Stipiturus malachurus.*) This curious species of bird inhabits Australia. The beak, which is dark brown, is furnished with strong bristles: the general colour of the plumage is ferruginous, but the feathers of the upper parts of the body and wings are streaked down the middle with brownish black: over the eyes, arising at the base of the beak, is a pale blue streak; throat and fore part of the neck of the same blue colour: the feathers of the rump are soft, long, and silky; wings short, nearly reaching to the base of the tail, which is upwards of four inches long; the shafts very slender and black, the webs on each side consisting of minute slender hairy black filaments, placed at distances, and distinct from each other, as in the feathers of the Cassowary. It is fond of marshy places, abounding with long grass and rushes. When disturbed, its flight is very short, and it runs on the ground with great swiftness.

STOAT. [See ERMINE.]

STILT, or STILT PLOVER. (*Himantopus.*) A genus of wading birds, remarkable for the extreme length and slenderness of their legs, and for the peculiar form of the bill, which is round, slender, and pointed. Stilts, though not numerous, are found in every quarter of the globe; the species which occasionally visits England and Western Europe being spread throughout Asia and Africa — two others being met with in America, and one in Australia. The European species is white, with a black calotte and mantle, and red legs. They are destitute of a hind toe, and their long legs are so feeble as to render walking a painful effort to them; but they fly with great swiftness, and swim well. They frequent marshes, shallow lakes, &c.; and feed upon minute shell-fish, insects, crustacea, &c. In constructing their nests, six or eight pairs of birds unite to build a platform, by which the nests may be raised above the middle of the water. [See HIMANTOPUS.]

STOCK-DOVE. (*Columba œnas.*) From the Stock-dove, or common WILD-PIGEON, it was once supposed that most of the beautiful varieties of the *Columbidæ*, which in a state of domestication are dependent upon man, derived their origin: hence the name *Stock*-dove. It is, however, now believed that the Rock-dove (*Col. livia*) is the parent stock. It is fourteen inches in length: the bill is pale red; the head, neck, and upper part of the back are of a deep bluish gray, reflected on the sides of the neck with glossy green and gold; breast pale reddish purple; the lower part of the back and the rump light gray or ash, as are also the belly, thighs, and under tail-coverts; the primary quill feathers are dusky, edged with white, the others gray, marked with two black spots on the outer webs; tail ash-gray, tipped with black; legs and feet red; claws black. The pigeon-fancier's art has been carried so far as to produce an almost endless variety of tints among the various do-

STOCK-DOVE.—(COLUMBA ŒNAS.)

mesticated species. Wild Pigeons are said to migrate into England at the approach of winter, from the northern regions, and return in the spring; many of them, however, remain in this country. They build in the hollows of decayed trees, and usually have two broods in the year; but in a state of domestication they generally breed every month; and although they only lay two eggs at a time, if all were suffered to live their increase in a few years would become

ua. The male and female perform
e of incubation by turns, and feed
oung by casting up the provisions
hey have treasured up in their capa-
op. At first the young are served with
nsiderably macerated; but as they
der, the parents gradually diminish
ble of preparing it; and at length send
e young birds to provide for them-
However, when they have plenty of
ns, it is not uncommon to see young
nost fit for flight, and eggs hatching
ame time in the identical nest.

APODA. An order of the class
es, all the species of which are ma-
d the largest only found in tropical
. In many of the animals composing
er the feet approach the mouth. The
form of the body bears considerable
ance to that of the Crayfish and its
the abdomen being much prolonged,
-fin much expanded laterally, and
ndages beneath the abdomen being
ed and used as fin-feet. As they in-
e deep parts of the sea, their habits
well known, but they are supposed
racious. [See SQUILLA, and OPOSSUM
]

ATIA. A genus of Mollusca, the
f which are auriform, but distin-
from *Haliotis* by being destitute of
es of holes; mouth large, oblong,
pearly. They are found in the East
eas, and in those of Australia.

ECHAT. (*Saxicola rubicola.*) This
ich belongs to the same family as the
ffed-breast, is nearly five inches in
and is chiefly found on wild heaths
amons, where it feeds on small worms
kinds of insects. The bill is black; the
ck, and throat black, faintly mixed
wn; on each side of the neck, imme-
above the wings, there is a large white
e back and wing-coverts are of a fine
black, edged with brown; the quills
body are white at the bottom, form-
ot of that colour on the wings; the
a bright bay; the rump white; tail
black. This solitary bird builds at the
bushes, or underneath stones, care-
oncealing the entrance of the nest,
ng a variety of arts to prevent any
m tracing it to its retreat. It is al-
ntinually on the wing, flying from
bush, and resting but for a few
at a time. The sound of its note has
ought to resemble the clicking of two
ogether, which circumstance has been
the origin of its name.

E CURLEW. (*Œdicnemus crepi-*
This bird is also called the Whistling
ilk Plover, and belongs to the order
ores. It is larger than the Woodcock,
ansion of the wings being three feet.
straight bill, two inches long, black
the base, and yellow at the tip.
ach of the eyes there is a bare space,
lowish green: the breast and thighs
yellowish white; the *middle of the*
ne head, and the neck are black,
with a reddish ash-colour; on the
quill-feathers there are transverse white
spots; and some of the wing-feathers, which
are tipped with white, appear beautifully
mottled. The tail is about six inches long,
and variegated like the wings; the legs are
long and yellowish; the claws small and
black. This bird has no hind toe, and those
before are united by a small membrane. It
is a native of several English counties, par-
ticularly Norfolk. It is rapid on foot, and
powerful in flight, which it executes in wide
circles; and it is remarkable for its piercing
shrill note, which it sends forth in the even-
ing. It lays two eggs of a dirty white, marked
with spots and streaks of a deep reddish
colour; feeds on slugs, worms, and cater-
pillars; and its flesh, when young, is con-
sidered delicious.

White of Selborne observes in a letter to
Pennant, "I wonder that the Stone Curlew,
Charadrius Œdicnemus, should be mentioned
by writers as a rare kind: it abounds in all
the campaign parts of Hampshire and Sussex,
and breeds, I think, all the summer, having
young ones, I know, very late in the autumn.
Already (March 30.) they begin clamouring
in the evening. They cannot, I think, with
any propriety, be called, as they are by Mr.
Ray, 'circa aquas versantes:' for with us,
by day at least, they haunt only the most
dry, open, upland fields and sheep-walks,
far removed from water: what they may do
in the night I cannot say. Worms are their
usual food, but they also eat toads and frogs.
It lays its eggs, usually two, never more
than three, on the bare ground, without any
nest, in the field; so that the countryman,
in stirring his fallows, often destroys them.
The young run immediately from the egg,
like partridges, &c., and are withdrawn to
some flinty field by the dam, where they
skulk among the stones, which are their best
security; for their feathers are so exactly of
the colour of our gray-spotted flints, that the
most exact observer, unless he catches the eye
of the young bird, may be eluded. . . . *Œdic-
nemus* is a most apt and expressive name for
them, since their legs seem swollen like those
of a gouty man. After harvest I have shot
them before the pointers in turnip-fields."
This bird appears to be pretty generally dis-
tributed throughout Europe; in the south of
France and in Italy it is abundant; and in
many parts, as in Britain and Germany,
it is migratory; but it is seldom met with
in the northern counties of England, and
scarcely ever in Scotland.

STORK. (*Ciconia.*) A genus of large
Grallatorial birds. In most countries Storks
are held in great esteem by the inhabit-
ants, as they tend to prevent the increase
of noxious vermin by destroying great
numbers, all the species being extremely
voracious. They reside in marshy places,
where their chief food (reptiles, worms, and
insects) is found; and they migrate in large
flocks to immense distances, returning regu-
larly to their former habitations. They have
no voice, but produce a clattering with their
bills, by striking the mandibles together.
Among the ancients, to kill them was con-
sidered a crime, which, in some places, was

punished even with death; and, like the Ibis, this bird became the object of worship. The Stork is remarkable for its great affection towards its young, but more especially for its attention to its parents in old age.

The White Stork (*Ciconia alba*) is upwards of three feet six inches long. The head, the neck, and the whole of the body are of a pure white; the scapulars and wings black: the bill, seven inches in length, is of a fine red colour; and the legs and bare part

WHITE STORK.—(CICONIA ALBA.)

of the thighs are also red. The neck is long and arched; and the feathers near the breast are long and pendulous. The Stork inhabits various parts of the temperate regions of the Old Continent, though it rarely visits England. The nest is made of dry sticks, twigs, and aquatic plants, sometimes on large trees, or the summits of high rocky cliffs: this, however, says Bewick, seldom happens, for the Stork prefers the neighbourhood of populous places, where it finds protection from the inhabitants; who, for ages, have regarded both the bird and its nest as sacred, and commonly place boxes for them on the tops of the houses wherein to make their nests; to which they return, after the most distant journeys, and every Stork takes possession of his own box. When these are not provided for them, they build on the tops of chimneys, steeples, and lofty ruins. The Stork lays from two to four eggs, the size and colour of those of a goose, and the male and female sit by turns. They are singularly attentive to their young, both together never quitting the nest, but each by turns bringing provisions for them. Their food consists of serpents, lizards, frogs, small fish, &c. In their migrations these birds avoid the extremes of heat and cold; never being seen in summer farther north than Russia or Sweden, nor in winter farther south than Egypt, where it is constantly seen during that season. Before they take their departure they assemble in large flocks, making a clattering noise, and appearing to be all bustle and consultation; but when they are actually about to leave, the whole body become silent, and move at once, generally in the night. The flesh of this bird is very rank, and not fit for food.

The Black Stork. (*Ciconia nigra*) species is not so large as the preceding about three feet in length. Its hea the whole of the upper parts of t wings, and tail are dusky, with gr purple hues; the under parts of th and belly are pure white; the be naked skin about the eyes, and thr deep red; as also are the legs. Th Stork inhabits many parts of Europe not so common as the white. It is be a solitary bird, frequenting the s questered places to breed: it builds laying two or three eggs, of a dul shaded with green, and slightly mark brown spots. Like the White St flesh is wholly unfit for food.

The American Stork. (*Ciconia ari.*) There is little difference in tween this species and the common Stork: the head, neck, back, tail, the under parts of the body are of white: the feathers at the base of t are long and pendent; the wings an tail-coverts are dusky, glossed with a large naked space on the upper par throat, which is capable of dilatation fine vermillion hue, as is also the ski surrounds the eyes. The beak is g yellow; the feet red, and the claws This bird inhabits various parts of A and is said to be good food.

STRATIOMIDÆ. A family of D insects, which in the perfect state u rally found, in damp situations, upon sucking their sweets. They are prettily coloured, and some of the have beautiful metallic tints. Th of some are aquatic, whilst others ar under ground, in dung, or the rotten of wood; but they all agree in retain larva skin in its original form during existence in the pupa state.

STORMY PETREL. (See Petre

STREPSIPTERA. The name g Kirby to an order of insects (consisti of a single family, *Stylopidæ*) which rudimental elytra in the form of lit spirally twisted scales. The specie posing this order are all of small s of them reaching a quarter of an length. The body is long and n the thorax large and singularly dev mouth with two slender acute jaw apart, and two biarticulate palpi; a wings transformed into a pair of slender, contorted appendages; pe wings very large, folding longitudina a fan. The head is distinct and expa is transverse, with the eyes very large, and prominent, being placed upon th tracted sides of the head, which give the appearance of being inserted upo footstalks. The number of hexagona is small, and they are singularly se from each other by a septum or pa which, being elevated above the lense the eyes a cellular surface. In fe tenacricornis Mr. Templeton would detec whose fibres, issuing in the eyes, ob quite visible. The antennæ are sh

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, all exhibiting a complicated structure
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anterior lateral angles of the meta-
t, and can be folded up longitudinally
sides of the body. The legs are mo-
ly long, and rather weak, but the coxæ
two anterior pairs are elongated, giving
considerable powers of motion. The
s are simple; the tibiæ not furnished
spurs; and the tarsal joints are fur-
l beneath with large fleshy cushions,
ut any terminal ungues. These in-
in their early states, are parasitic in
dies of various bees and wasps; the
when full-grown, protruding its head
m the abdominal segments of these
t, appearing, at first sight like a small
ed acarus.

Kirby's account of the discovery of
insects, and of the bursting forth of
ango, is, in Mr. Westwood's opinion, so
ting, that he gladly avails himself of
llowing extract. After mentioning
e had repeatedly observed something
the abdomen of various Andrenæ,
he had at first regarded as a kind of
, he at length determined to examine
scribe one of them: "But what was
tonishment when, upon attempting to
ge it with a pin, I drew forth from
dy of the bee a white fleshy larva a
r of an inch long, the head of which
mistaken for an acarus. How this
l receives its nourishment seems a
y. Upon examining the head under
g magnifier, I could not discover any
or proboscis with which it might per-
the corneous covering of the abdomen,
support itself by suction: on the
ide of the head, at its junction with
y, there was a concavity; but I could
nothing in this but a uniform un-
surface. As the body of the animal
rted in the body of the bee, does that
ceive its nutriment from it by ab-
n? After I had examined one spe-
I attempted to extract a second; and
ader may imagine how greatly my
tonishment was increased when, after I
ewn it out but a little way, I saw its
rust, and a head as black as ink, with
taring eyes and antennæ, consisting
branches, break forth, and move itself
from side to side. It looked like a
mp of darkness just emerging from
ternal regions. I was impatient to
better acquainted with so singular
ture. When it was completely dis-
d, and I had secured it from making
ape, I set myself to examine it as ac-
rately as possible; and I found, after a careful inquiry, that I had not only got a nondescript, but also an insect of a new genus, whose very class [order] seemed dubious."

"In the perfect state, these insects are but short-lived, delicate creatures. Mr. Dale, who has been very fortunate in his discoveries of this order, thus describes the proceedings of one which he caught flying, on the 7th of May, over a quickset hedge of a garden. 'It looked milk-white on the wing, with a jet-black body, and totally unlike any thing else; it flew with an undulating or vacillating motion amongst the young shoots, and I could not catch it till it settled on one, when it ran up and down, its wings in motion, and making a considerable buzz or hum, as loud as a Sesia; it twisted about its rather long tail, and turned it up like a Staphylinus. I put it under a glass, and placed it in the sun; it became quite furious in its confinement, and never ceased running about for two hours. The elytra, or processes were kept in quick vibration as well as the wings; it buzzed against the sides of the glass, with its head touching it, and tumbled about on its back. By putting two bees (*Andrena labialis*) under a glass in the sun, two Stylops were produced: the bees seemed uneasy, and went up towards them, but evidently with caution, as if to fight; and moving their antennæ towards them, retreated. I once thought the bee attempted to seize it; but the oddest thing was to see the Stylops get on the body of the bee and ride about, the latter using every effort to throw his rider." These insects appear at different times of the year, and seem widely distributed.

To the foregoing we should add, that in the 'Anniversary Address delivered at the Entomological Society, Feb. 10. 1845, by the President, G. Newport, Esq., F. R. S.' it was shown, from the discoveries of Dr. Siebold of Erlangen, that the *Strepsiptera* undergo a singular metamorphosis; that the males and females differ from each other, the metamorphosis of the males being complete, they alone being furnished with wings: the females, on the contrary, have neither legs, wings, nor eyes, and greatly resemble larvæ. These females are viviparous, and never quit the bodies of the Hymenoptera in which they live as parasites. The young Strepsiptera, at the moment that they burst the eggs in which they are developed within the body of the parent, have six legs, and are furnished with organs of manducation.

STRIGOPS. A remarkable genus of Scansorial birds belonging to the Parrot family, which at first sight has a strong resemblance to an Owl. It was established by Mr. G. Gray for the reception of a species in the British Museum, to which he has given the name of *Strigops habroptilus*. It is of a greenish colour, mottled and streaked with black; and from a letter of Mr. Strange, read at the Zoological Society, it appears that in New Zealand, where it is very rare, it is called *Kakapo*, and is nocturnal in its habits; resorting in the day-time to burrows formed under the roots of trees, or to large

masses of rock. It feeds on the roots of the fern, and on the outer covering of the *Phormium tenax*, or New Zealand flax. The French Museum has subsequently obtained a specimen from Stewart Island, to the south of New Zealand. A figure of it is given in 'L'Illustration,' December 4. 1847.

STRIGIDÆ. The name of the family of Nocturnal birds of which the Owl (*Strix*) is the type. [See OWL.]

STROMBUS; STROMBIDÆ. A genus and family of Mollusca, for the most part found in the seas of tropical countries, inhabiting large and thick oval shells. The head of the animal is furnished with a proboscis and two short tentacula; and the eyes are situated on a lateral peduncle longer than the tentacula itself. Spire of the shell moderate; mouth long, and rather narrow, terminated by a canal more or less long and recurved; right lip dilated in the adult, and having a small notch or sinus near the canal; left lip sometimes thickened; operculum horny, long, and narrow. In many species the spire is quite hidden by the expansion of the outer lip. In the *Strombus gigas*, a very large species, which is caught for the table, pearls are said to be occasionally, though very rarely, found. Mr. Wood, in

PELICAN'S-FOOT SHELL.
(STROMBUS [APORRHAIS] PES-PELECANI.)

his 'Zoography,' relates that he saw a pink pearl, weighing twenty-four grains, taken from the body of one of this species that was caught off the island of Barbadoes. As an example of this group of shells we have subjoined a figure of the *Strombus* (*Aporrhais*) *Pes-Pelecani*, or Pelican's-foot shell, which has received its name from the processes round the mouth being arranged and connected much as in the foot of that well-known bird. Some of the Stromba are used to make artificial cameos. [See HELMET SHELL.]

STRUTHIO. [See OSTRICH.]

STRUTHIOLARIA. A genus of marine Mollusca, found in New Holland and New Zealand. The shells are oval, in shape like a *Buccinum*, but differ in having a thickened lip; the spire is elevated; mouth oval, terminated by a very short straight canal; no varices; operculum horny: they are both rare and singular.

STRUTHIONIDÆ. The name of a family of large birds, incapable of flight, having mere rudimentary wings, but long and strong legs; including the O Cassowary, and other congeneric sp

STURGEON. (*Acipenser.*) A large Cartilaginous fish, allied wo the Shark and Ray, but differing in structure, as well as in habits are several species.

The COMMON STURGEON (*Acipens* is generally about six feet long, but attains to the length of eighteen. the Northern, European, and Amer migrating during the early summe into the larger rivers and lakes, an ing to the sea again in autumn, aft

COMMON STURGEON.—(ACIPENSER

deposited its spawn. Its form is slender, gradually tapering towar and covered throughout the whi by five rows of strong, large, bony rounded at the base, and termina by a sharp curved point in a rever tion. The body of the Sturgeon i less covered with bony plates, ar longitudinal rows; and the head in a similar manner: the snout is slender, obtuse at the tip, and beneath, at some distance from the four long worm-shaped cirri: th placed under the elongated mandib and toothless; and the palatal b the upper jaw; the air-bladder is v and communicates by a wide ope the gullet. The pectoral fins are middle-sized; the dorsal small, ar very near the tail; the ventral and are also small, and placed nearly the dorsal. The tail is lobed u forked, the upper lobe extending f the lower. The general colour is above, with dusky specks, and y white beneath; and the tops of the are of a similar cast. Though considered as a fish of slow mot sometimes seen to swim with great and also to spring out of the w great force at intervals. It is ran at any great distance from shore, quents such parts of the sea as a mote from the estuaries of large ri North America they appear in gr dance during the early summer The flesh of the Sturgeon is white, and firm; it is said to resemble ve roasted; but it is generally eaten and the major part of what we r that state comes either from the Bal or those of North America. It ascends the large rivers in our con not in any quantities, and is ver taken in the salmon-nets. From when properly salted and dried, it the substance known by the name o but a very superior sort is made smaller species, called the Sterlet. The Sturgeon was a fish in hig

d Romans, and, ac-
brought to table with
mented with flowers,
it being also adorned
ecompanied by music.
been esteemed in all
ons do not consider it
ancients. Its fishery,
f importance.

f Sturgeon, called the
(*Acipenser huso*), is
ack and Caspian seas,
y streams in immense
tly attains the length
five feet; and some
hing nearly 3000 lbs.
the middle of winter,
vered with ice, is very
all the smaller fishes,
getables. The fishery
tly important in the
wards of a hundred
yearly. The caviar
made from its eggs,
undance as to consti-
of the total weight.
n aliment in Turkey,
ly, and especially in
important article of
able to Russia. The
holesome, and of an
he isinglass of com-
the air-bladder; and
a substitute for butter

NIDÆ. A genus and
fishes, of which the
[See STURGEON.]

NIDÆ. A genus and
ds, of which the com-
miliar example. [See

URFISH.]

(*Sus*, Linn.) A fa-
highly important to
imals composing this
d by having on each
toes shod with stout
toes which are much
ouch the earth. The
ple in number, but the
evelled forwards; the
from the mouth and
The muzzle is termi-
nout fitted for turning
Babyroussa, Peccary,
a, are included in the
OG.]

grida.) A family of
he most brilliant plu-
e juices of flowers.
us *Cinnyris* as being
ng and slender bill,
two mandibles finely
ue, which can be pro-
erminating in a fork.
small birds, the *plu-
glitters in the season
colours, approaching
the Humming-birds*,
which they represent in this respect in the Old Continent, where they are found principally in Africa and the Indian Archipelago. Their subsistence for the most part is drawn from the nectar of flowers; their nature is gay, their song agreeable, and their beauty makes them much sought after in our cabinets; but as the tribe is confined exclusively to the torrid zone and the southern hemisphere, the naturalists of our northern latitudes have little opportunity of observing their manners or of inspecting their internal construction. There is an obvious affinity between the *Cinnyridæ*, the *Trochilidæ*, and the *Meliphagidæ*. One species will be sufficient to describe.

The SUN-BIRD. (*Cinnyris splendida*.) The length of this beautiful bird is rather more than five inches. The bill and legs are black; the head and throat deep violet-blue, with a gloss of gold on the crown; upper part of the neck, back, wing and tail-coverts, of a deep but very brilliant golden green, and stretching to a considerable extent over the tail: across the middle of the breast runs a bright red bar, beyond which the abdomen and thighs are of the same deep violet-blue colour as the breast: the wings and tail are black.

SUN-FISH. (*Orthagoriscus*.) A genus of Cartilaginous fish, remarkable for its peculiarity of form: the body is compressed, broad, abruptly truncated, resembling, in fact, the head of a large fish separated from the body. Its nearly circular form, and the silvery whiteness of the sides, together with their brilliant phosphorescence during the night, have obtained for it very generally the appellations of sun or moon-fish. While

SHORT SUN-FISH.—(ORTHAGORISCUS MOLA.)

swimming, it turns round like a wheel: it has also the power of floating with its head and eyes above water, but not of inflating or distending itself with air: in this state it moves along sideways, very slowly, however; and appears like a dead or dying fish. It grows to an immense size, often attaining the diameter of four feet, sometimes even double that size, and occasionally weighing from three to five hundred pounds. It is very fat, and yields a great quantity of oil; but the flesh is ill tasted, and exhales a disagreeable odour. It is found in almost all seas, from the arctic to the antarctic circle. There are three or four species; two of

which is a native of the Mediterranean, and found there in abundance, is also of frequent occurrence on the southern and western coasts of England. It seldom exceeds fourteen inches in length, and even that is accounted very large. Its colour is an elegant rose-red, tinged with olive on the back, and

RED MULLET.—(MULLUS SURMULETUS.)

of a silvery cast towards the abdomen; marked on each side by two, and sometimes three, longitudinal lines. In the Mackerel season they are often taken with a draught of those fishes; and so abundant are they occasionally, that in August 1819, five thousand were taken in one night in Weymouth Bay. Mr. Yarrell observes that "the Striped Red Mullet has been considered migratory; but it appears in the shops of the London fishmongers throughout the year, though in much greater plenty during the summer, at which time their colours are most vivid, and the fish, as food, in the best condition. The food appears to be selected from among the softer crustaceous and molluscous animals." [See MULLET.]

SWALLOW. (*Hirundo.*) This well-known group of birds has often been eulogized by the lovers of nature; but no one, perhaps, has expressed his admiration with more truth and fervour than our own philosophic countryman, Sir Humphry Davy. "The Swallow," he says, "is one of my favourite birds, and a rival of the nightingale, for he cheers my sense of seeing as much as the other does my sense of hearing. He is the glad prophet of the year, the harbinger

o southern regions at the approach
er: the Swallow alone, on whom
has conferred superior powers of
ust sink in torpidity at the bottom
rivers, or doze all winter in the ca-
the earth. I am myself something
veller, and foreign countries afford
ovel sights: should I assert, that in
my peregrinations I had met with a
of Indians, all of whom, old and
t the commencement of cold wea-
scend to the bottom of their lakes
rs, and there remain until the break-
f frost; nay, should I affirm, that
ds of people in the neighbourhood
city, regularly undergo the same
nual submersion,—that I myself had
a whole family of these from the
of Schuylkill, where they had lain
ll winter, carried them home, and
them all comfortably to themselves
should I even publish this in the
pages of the 'Transactions' of our
hical Society, who would believe
then, the organization of a Swallow
cate than that of a man? Can a
se vital functions are destroyed by
rivation of pure air and its usual
stain, for six months, a situation
e most robust man would perish in
urs, or minutes? Away with such
ies! they are unworthy of a serious
n."

ist Chimney or House Swallow.
o rustica.) In length this bird is
ore than six inches: the bill is black;
and chin chestnut red; top of the
d all the upper parts of the body
lossed with purplish hue; the quills
rings, according as they are seen in
positions, are bluish black or green-
n; while those of the tail are black,
een reflections: upper part of the
back: lower part and belly white:
e and corners of the mouth yellow:
long and much forked; and each
except the two middle ones, marked
oval white spot on the inner web:
t, delicately fine, and dusky. Every
ust have observed the elegant and

olish Chimney Swallow,
(Hirundo rustica.)

ght of this bird, during the summer
when it is almost continually on
performing its various evolutions,
ching for its insect food, which it
ing, and by suddenly opening its
The nest of this bird is composed

of mud, rendered tough by a mixture of hair and straw, lined with feathers, and fixed firmly about three or four feet from the top of the inside of a chimney. The female lays five or six eggs, white, speckled with red; and it generally has two broods in the year. The nestlings are sometimes dislodged from their nest, and fall down; and when that is the case, the old ones will frequently continue to supply them with provisions until they are able to shift for themselves. They generally make their first appearance in this country in the early part of April, and retire from us to the south on the approach of winter. For some time before they quit this part of the world they forsake houses, and roost on trees, preferring the dead, leafless branches; and within a day or two of retiring, they assemble in vast flocks on house-tops, the leads of churches, and on trees, especially by the water side, from which circumstance it has been erroneously supposed that they retired into the water.

The Barn Swallow (*Hirundo rufa*) inhabits America, and receives its name from its frequently attaching its nest to the rafters in barns, &c. The upper parts are steel blue, the lower light chestnut, and the wings and tail brownish black: the tail is greatly forked, and each feather, except the two middle ones, is (like the Chimney Swallow) marked on the inner vane with an oval white spot. The Barn Swallow's nest is in the shape of an inverted cone, with a perpendicular section cut off on that side by which it adheres to the wood: it is formed of mud, mixed with fine hay, and disposed in regular strata from side to side; within there is a quantity of hay, which is profusely lined with goose feathers. The eggs are extremely transparent; white, sprinkled with reddish-brown, and are five in number. When the young birds first leave the nest they are observed to fly about within doors, for some days before they venture out; which when they do they are conducted by the old ones to the sides of rivers, &c., where the food is most abundant, and they are fed by them in the same manner as the European Swallow does its young. These birds are easily tamed, and soon become very gentle and familiar. Their song is a sprightly warble, and is sometimes continued for a length of time.

The Cliff Swallow (*Hirundo fulva*) is easily distinguished by its even tail. The upper parts of the body are black, glossed with violaceous; the under parts whitish, tinged with ferruginous brown; the throat and cheeks dark ferruginous; and the front pale rufous. It lives in communities, building in unsettled places, under projecting ledges of rocks. The nests are formed of mud, are very friable, and somewhat resemble in form a chemist's retort. Their note is very singular, and may be imitated by rubbing moistened cork round the neck of a bottle. It is a native of North America.

The Martin, Martlet, or Window Swallow. (*Hirundo* [*Chelidon*] *urbica.*) This species of Swallow, with which all per-

sons are familiar, and which Shakspeare terms "the temple-haunting Martlet," is found throughout Europe and Asia, and is much more abundant in England than the Swallow, which generally arrives here about ten days previous to this bird. It is about five inches and a half in length; bill black; upper parts of the body and tail of a glossy blue black; rump and all the under parts of the body white; ends of the secondary quill-feathers finely edged with white; and the legs covered with white downy feathers down to the claws, which are white also, very sharp and much hooked. Should the weather prove favourable, it begins to build early in May; placing its nest generally beneath the eaves of a house or building against rocks and cliffs by the sea-side. The nest is composed externally of mud and straw, and lined with feathers. The first hatch consists of five eggs, which are white inclining to dusky

MARTIN — (HIRUNDO URBICA.)

at the thicker end: the second of three or four; and if a third, of only two or three. While the young birds are confined to the nest, the parents feed them, adhering by the claws to the outside; but as soon as they are able to fly, they receive their nourishment on the wing, by a quick and almost imperceptible motion. As the season advances the flocks increase in number daily, from the addition of the second and third broods; and during the month of October they generally migrate, continuing to depart till about the 6th of November, by which time they have generally all disappeared.

The SAND MARTIN, or BANK SWALLOW (*Hirundo* [*Cotyle*] *riparia*), is the smallest as well as the least numerous of our Swallows. It has no partiality for the society of man, but dwells in communities along steep gravelly and sandy banks, in which it makes deep holes for breeding places. Several of these holes are often within a few inches of each other, and extend in various strata along the front of the precipice, sometimes for eighty or a hundred yards. At the end of the hole is placed the nest, which is carefully constructed of straw, dry grass, and feathers. The female lays five or six white eggs, almost transparent, and has commonly two broods in the year. The yo hatched late in May; and Wilson that he has taken notice of the crow, in parties of four or five, wat the entrance of these holes, to seize straggling young that should make pearance. He also observes, that "f clouds of Swallows that usually pla these breeding-places, they remind o

SAND MARTIN.—(HIRUNDO RIPA

distance of a swarm of bees." This is common to Europe and America, in this country first of the Swallow is the scarcest and most local with is extremely abundant in America. are particularly fond of the shores and, in several places along the Oh he), they congregate in immense mu We have sometimes several days rain and severe weather after their in spring, from which they take r their holes, clustering together for and have been frequently found times in almost a lifeless state with which circumstance has contributed belief that they lie torpid all winter recesses. I have searched hundreds holes in the months of December nuary, but never found a single S dead, living, or torpid. I met with in considerable numbers on the shore Kentucky river, between Lexingt Danville. They likewise visit the in great numbers, previous to their ture, which continues from the end tember to the middle of October." plumage is mouse-colour above; tha fore part of the neck, belly, and vent, wings and tail brown, the outer slightly margined with white; legs slightly feathered behind; feet smo dark brown. The manners of this are similar to those of the Common with which bird it often associates, over the water in pursuit of insects.

The PURPLE MARTIN (*Progne pu* is a native of America, inhabiting a of the United States and Canada t son's Bay. It is a general favouri takes up its abode among the habita men. The Indians and Negroes h gourds, properly hollowed for its c ence; and in some parts of the Unit siderable expense is sometimes incu preparing for it a suitable residence. country it renders essential service, rying and driving away crows, haw other large birds. To observe wh

spirit and audacity this bird dives and sweeps upon and around the hawk or the eagle is astonishing. He also bestows an occasional buffeting on the King-bird when he finds him too near his premises; though he will, at any time, instantly co-operate with him in attacking the common enemy. Its note is loud and musical. The colour of the male is a rich and deep purplish blue, with the wings and tail brownish-black: the female is more plainly attired, and has the under parts whitish, with dusky and yellowish

PURPLE MARTIN.—(PROGNE PURPUREA.)

stains. The food of the Purple Martin is mainly the larger winged insects; as wasps, bees, large beetles, &c. In flight it possesses all the swiftness, ease, and grace of the tribe; sometimes sailing among the clouds at a dizzy height, at others darting through the crowded streets with the rapidity of thought. It lays from four to six eggs, which are pure white. About the middle of April these Martins first begin to prepare their nest, which is formed of dry leaves, slender straws, hay, and feathers. The first brood appears in May, the second late in July. During the period in which the female is laying, and before she commences incubation, they are both from home the greater part of the day. When the female is sitting, she is frequently visited by the male, who also occupies her place while she takes a short recreation abroad. He often passes a quarter of an hour in the apartment beside her; and, when not thus engaged, sits on the outside dressing and arranging his plumage. His notes, at this time, seem to have assumed a peculiar softness, and his gratulations are expressive of much tenderness. Conjugal fidelity, even where there is a number together, seems to be faithfully preserved by these birds. For ESCULENT SWALLOW and SWIFT, see SWIFT.

SWALLOW-TAIL [BUTTERFLIES]. A name given by insect collectors to some species of Butterflies of the genus *Papilio*.

SWAN. (*Cygnus.*) A genus of web-footed birds, distinguished by their graceful and majestic appearance, their muscular power, and superior size. The generic character of *Cygnus* is thus given: beak of equal breadth throughout; higher than wide at the base, and depressed at the point; both mandibles furnished along the sides with transverse *serrated lunellæ*; the *nostrils placed about midway*; and the neck very long, and slender; legs short, the hind toe small and free. They feed chiefly on the seeds and roots of aquatic plants, and on the grass which grows near the brink of the water. The plumage of Swans, as in Geese, is similar in both sexes, is moulted only once in the year, and undergoes no seasonal variation of colour: like Geese, also, they attack with the same hissing note, strike similarly with their wings; and the male guards the female during incubation, and accompanies her while followed by her brood. In their anatomical structure, although infinitely superior in size and beauty, and easily recognized, they are so closely allied to the Duck and Goose, that it is difficult to point out distinctive characters.

The WILD SWAN, or WHISTLING SWAN. (*Cygnus ferus.*) This noble bird is nearly five feet in length, above seven in breadth with its wings extended, and weighs about fifteen pounds. Its bill is black, covered at the base with a yellowish white cere, the bare space over the eye being yellow: the entire plumage in adult birds is of a pure white, and, next to the skin, they are clothed with a thick fine down: the legs are black. "They generally," says Bewick, "keep together in small flocks, or families, except in the pairing season, and at the setting in of winter. At the latter period they assemble in multitudes, particularly on the large rivers and lakes of the thinly inhabited

WHISTLING SWAN.—(CYGNUS FERUS.)

northern parts of Europe, Asia, and America; but when the extremity of the weather threatens to become insupportable, in order to shun the gathering storm, they shape their course, high in air, in divided and diminished numbers, in search of milder climates. In such seasons they are most commonly seen in various parts of the British Isles, and in other more southern countries of Europe: the same is observed of them in the North American states. They do not, however, remain longer than till the approach of spring, when they again retire northward to breed." The female makes her nest of the withered leaves and stalks of reeds and rushes, and usually lays six or seven thick-shelled eggs, which in about six weeks are hatched; when both parents unremittingly watch and guard them. Much has been said in ancient times of the singing of the Swan, and many beautiful and poetical descriptions have been given of its dying song. No fiction of natural history, no fable of antiquity, was ever more

celebrated, oftener repeated, or better received: it occupied the soft and lively imagination of the Greeks; poets, orators, and even philosophers adopted it as a truth too pleasing to be doubted. The truth, however, is very different from such amiable and affecting fables; for the voice of the Swan is very loud, shrill, and harsh; though, when high in the air, and modulated by the winds, the note, or *hoop*, of an assemblage of them is not unpleasant. Equally absurd stories are current of their great strength of wing, and how dangerous it is to approach their nests, it being asserted that a blow from the wing of a Swan is capable of breaking a man's thigh. "It is high time," as Montagu observes, "such absurdities should be erased in this philosophic age, and that the mind of man should reason before he continues to relate such accounts, only calculated to frighten children." In Iceland, we are told, Swans are an object of chase. In the month of August they lose their feathers to such a degree as to be incapable of flying. The natives, at that season, resort in great numbers to the places where they most abound, and are accompanied with dogs and horses trained to the sport; by which means they take great numbers. But when in full plumage, Swans are so extremely swift on the wing as to make it very difficult to shoot them.

The Tame Swan, or Mute Swan. (*Cygnus olor.*) Our half-domesticated Swan is very properly entitled the peaceful monarch of the lake; conscious of his superior strength, he fears no enemy, nor suffers any bird, however powerful, to molest him. The plumage of this species is of the same snowy whiteness as that of the Wild Swan, and the bird is covered next the body with the same kind of fine close down; but it greatly exceeds the Wild Swan in size, weighing about twenty-five pounds, and measuring more in the length of the body and extent of the wings. It also differs in being furnished with a projecting, callous, black tubercle or knob on the base of the upper mandible, and in the colour of the bill, which is red, with black edges and tip; the naked skin between the bill and the eyes is also of the latter colour; legs black. This species cannot with strict propriety be called domesticated; they are only, as it were, partly reclaimed from a state of nature, and invited by the friendly and protecting hand of man to decorate and embellish the artificial lakes and pools which ornament his pleasure grounds. On these the Swan cannot be accounted a captive, for he enjoys all the sweets of liberty. Placed there, as he is the largest of all British birds, so is he to the eye the most pleasing and elegant. "What in nature," exclaims Bewick, "can be more beautiful than the grassy margined lake, hung round with the varied foliage of the grove, when contrasted with the pure resplendent whiteness of the majestic Swan, wafted along with erected plumes by the gentle breeze, or floating, reflected on the glassy surface of the water, while he throws himself into numberless graceful attitudes, as if desirous of attracting the admiration of the spectator! The Tame Swan is found, in its wild state, in eastern countries of Europe and Asia; domesticated, it occurs in almost every European country. Swans are supposed to live to a great age, but no satisfactory evidence has yet been brought forward to prove the assertion. The young do not acquire their full plumage till the second year; during this period they are called Cygnets, and in former times were much esteemed for food, though they are not at present so.

The Black Swan (*Cygnus atratus*) is nearly the size of the Tame Swan. The bill is large and red, the tip being white, and at the base of its upper mandible, near the nostrils, is a bluish protuberance; the lower mandible is red on the sides and white beneath; the irides are red. The prevailing colour of the plumage is of a deep

BLACK SWAN.—(CYGNUS ATRATUS.)

with all the primary quills, the greater part of the secondaries, and part of the wing coverts white; the belly and thighs are cinereous; the legs brownish flesh colour. The female is destitute of the white tubersnce on the beak. These birds inhabit various parts of Australia, and are generally seen floating on some lake in small flocks of eight or nine. The Swan River, in Western Australia, derives its name from the great abundance of them found there. Their habits are but little known; but in a domesticated state their food is similar to that of the other species. When disturbed, they generally fly off in line or single file, and are so shy that it is difficult to get within gunshot. Their note is rather melodious than powerful, though not of long continuance. This species, like the Tame White Swan, is often kept as an ornament in parks in this country, and is now by no means the "rara in terris" of antiquity.

Swift, or Black Martin. (*Cypselus apus.*) This species of the *Hirundo* or Swallow tribe, arrives later in this country and departs sooner than any of its congeners. It is larger, stronger, and its flight more rapid than that of any other of the tribe. Its length is nearly eight inches; the colour a sooty black, with a greenish gloss; the wings very long in proportion to the size of the body; tail much forked; bill black; chin white; legs dark brown, and very short. When standing two and two on each side of the foot, and united, of two phalanges each, except the outer, which has three. The female is less than the male, and has the general colour of her plumage

d to brown. The Swift builds its
the holes and crevices of high towers
y steeples; it is constructed of dried
ilk or linen threads, pieces of muslin,
rs, and such kind of materials, which
d collects on the wing, picking them
m the ground with great dexterity.
s only two white, oblong eggs; and
the period of incubation the male is
ually flying to and fro, uttering its
reaming note. It has but one brood
year, so that the young ones have
gain strength enough to accompany
rent birds in their distant excursions.
have been noticed at the Cape of Good
and probably visit the more remote
of Asia. Swifts fly higher, and wheel
older wing than the Swallows, with
they never intermingle. Their life
to be divided into two extremes; the
the most violent exertion, the other
ect inaction; they must either shoot
h the air, or remain close in their
They are seldom seen to alight; but if
accident they should fall upon a piece
a ground, it is with difficulty they can
r themselves, owing to the shortness
ir feet and the great length of their
They are said to avoid heat, and
a reason pass the middle of the day in
oles: in the morning and evening
o out in quest of provision; they then
en in flocks, describing an endless
of circles upon circles, sometimes in
anks, pursuing the direction of a street,
metimes whirling round a large edi-
ll screaming together: they often
long without stirring their wings, and
udden they move them with frequent
uickly repeated strokes. They arrive
the beginning of May, and depart in
t.

ERICAN CHIMNEY SWALLOW. *Acanthylis pelasgia.*) "This species," says the great
can ornithologist, Wilson, "is pecu-
our own; and strongly distinguished
ll the rest of our Swallows by its figure,
and manners. This Swallow, like all
t of its tribe in the United States, is
tory, arriving in Pennsylvania late in
or early in May, and dispersing them-
over the whole country wherever there
cant chimneys in summer sufficiently
nd convenient for their accommoda-
In no other situation with us are they
ed at present to build. This circum-
naturally suggests the query, Where
se birds construct their nests before the
of Europeans in this country, when
ere no such places for their accom-
ion? I would answer, Probably in
ne situations in which they still con-
o build in the remote regions of our
n forests, where European improve-
of this kind are scarcely to be found,
y, in the hollow of a tree, which, in
ases, has the nearest resemblance to
present choice of any other." "The
t site which they have chosen must
nt many more advantages than the
, since we see that, in the whole thickly
parts of the United States, these birds
have uniformly adopted this new conve-
nience, not a single pair being observed to
prefer the woods. Security from birds of prey
and other animals, from storms that fre-
quently overthrow the timber, and the nu-
merous ready conveniences which these new
situations afford, are doubtless some of the
advantages. The choice they have made
certainly bespeaks something more than
mere unreasoning instinct, and does honour
to their discernment.

AMERICAN CHIMNEY SWALLOW
(ACANTHYLIS PELASGIA.)

"The nest of this bird is of singular con-
struction, being formed of very small twigs,
fastened together with a strong adhesive glue
or gum, which is secreted by two glands, one
on each side of the hind head, and mixes
with the saliva. With this glue, which be-
comes hard as the twigs themselves, the
whole nest is thickly besmeared. The nest
itself is small and shallow, and attached by
one side or edge to the wall, and is totally
destitute of the soft lining with which the
others are so plentifully supplied. The eggs
are generally four and white, and they have
generally two broods in a season. The
young are fed at intervals during the greater
part of the night,—a fact which I have had
frequent opportunities of remarking both
here and in the Mississippi territory. The
noise which the old ones make in passing
up and down the funnel has some resem-
blance to distant thunder. When heavy
and long continued rains occur, the nest,
losing its hold, is precipitated to the bottom.
This disaster frequently happens. The eggs
are destroyed; but the young, though blind,
(which they are for a considerable time,)
sometimes scramble up along the vent, to
which they cling like squirrels, the mus-
cularity of their feet, and the sharpness of
their claws, at this tender age, being re-
markable. In this situation they continue
to be fed for perhaps a week or more. When
these birds first arrive in spring, and for a
considerable time after, they associate to-
gether every evening in one general rendez-
vous; those of a whole district roosting to-
gether. This place of repose, in the more
unsettled parts of the country, is usually a
large hollow tree, open at top; trees of that
kind, or swallow trees, as they are usually

called, having been noticed in various parts of the country, and generally believed to be the winter quarters of these birds, where, heaps upon heaps, they dozed away the winter in a state of torpidity. Here they have been seen on their resurrection in spring, and here they have again been remarked descending to the death-like sleep in autumn."

"The Chimney Swallow is easily distinguished in air from the rest of its tribe here, by its long wings, its short body, the quick and slight vibrations of its wings, and its wide unexpected diving rapidity of flight; shooting swiftly in various directions without any apparent motion of the wings, and uttering the sounds *tsip tsip tsip tsee tsee* in a hurried manner. In roosting, the thorny extremities of its tail are thrown in for its support. It is never seen to alight but in hollow trees or chimneys; it is always most gay and active in wet and gloomy weather; and is the earliest abroad in the morning, and latest out in evening, of all our Swallows. About the first or second week in September they move off to the south, being often observed on their route, accompanied by the purple martins." This species is four inches and a half in length, and twelve inches in extent; of a deep sooty brown, except the chin and line over the eye, which are of a dull white.

The Esculent Swallow. (*Collocallia esculenta.*) This bird is four inches and a half in length, and eleven in expanse: its beak is black: the upper parts of the plumage shining dusky black; under parts pale ash-colour; wings, when closed, one inch longer than the tail, which is slightly forked, and has all the feathers of an uniform black colour, and rounded at the end. The nest of this bird is exceedingly curious, and is composed of such materials that it is not only edible, but is accounted among the greatest dainties by the Asiatic epicures. It generally weighs about half an ounce, and is shaped like a common Swallow's nest, the flat side adhering to the rock. They are found in vast numbers in caves of various islands in the Soolo Archipelago, and are particularly abundant in Sumatra, about Croe, near the south end of the island: they have the appearance of fibrous, imperfectly concocted isinglass. More or less of this substance is contained in the nests of all Swallows in that region. The manner in which the substance is procured is not ascertained: the most probable supposition is, that it is the spawn of fish gathered by the bird, or a secretion elaborated in the bird's body. The birds, after having spent nearly two months in preparing their nests, lay each two eggs, which are hatched in about fifteen days: when the young birds become fledged, it is thought the proper time to seize upon their nests, which is done regularly three times a year, and is effected by means of ladders of bamboo and reeds, by which the people descend into the caves; but when these are very deep, rope ladders are used. It is attended with considerable danger, and many perish in the attempt. The Javanese and Chinese collect the nests, and make of them a profitable article of commerce. Dissolved in broths, &c., they make a delicious jelly. The finest are those obtained before the nest has been contaminated by the young birds; they are pure white, and are scarce and valuable. The inferior ones are dark, streaked with blood, or mixed with feathers: they are chiefly converted into glue. The only preparation which the birds' nests undergo is that of simple drying, without direct exposure to the sun, after which they are packed in small barrels, usually of half a picul. They are assorted for the Chinese market into three kinds, according to their qualities, distinguished into *first* or *best*, *second*, and *third* qualities. Caverns that are regularly managed, will afford in one hundred parts, fifty-three three-tenth parts of those of the first quality, thirty-five parts of those of the second, and eleven-seventeenth parts of those of the third. They are regarded only as an article of expensive luxury, and are sold at the most extraordinary prices; they are, consequently, consumed only by the great; and, indeed, the best part is sent to the capital for the use of the court. The sensual Chinese use them under an idea that they are powerfully stimulating and tonic; but it is probable that their most valuable quality is their being perfectly harmless.

The Fairy Martin. (*Collocalia Ariel.*) This curious and beautiful species is numerously dispersed over all the southern portions of Australia, where it usually arrives in the month of August, and departs again in February or March; during which interval it rears two or three broods. It is seldom seen within a few miles of the sea-coasts, but wherever suitable situations for breeding present themselves in the interior, it abounds. The nest, which is bottle-shaped with a long neck, is composed of mud or clay, and, like that of our Common Martin, is only constructed in the morning and evening, unless the day be wet or lowering. In the construction of the nests they appear to work in small companies, six or seven assisting in the formation of each nest, one remaining within and receiving the mud brought by the others in their mouths; in shape they are nearly round, but vary in size from four to six or seven inches in diameter; the spouts being eight, nine, or ten inches in length. Sometimes they are built in low decayed trees; sometimes under verandahs or in the corners of windows; and not unfrequently clusters of them are attached to the perpendicular banks of rivers, the sides of rocks, &c.; but always in the vicinity of water. They are lined with feathers and fine grasses. Eggs four or five in number, sometimes white, at others blotched with red. The Fairy Martin has the crown of the head rust-red; back, scapularies, and wing-coverts deep steel-blue; wings and tail dark brown; rump belly white; upper tail-coverts brown; under surface white, tinged with rust-red, particularly on the sides of the neck and flanks; the feathers of the throat, with a few on the

own the centre; irides blackish
blackish gray; legs and feet
Gould's Birds of Australia.

SWIFT. (*Tachornis phœnicobia.*)
by Mr. Gosse, in his interesting
'Birds of Jamaica,' that this
med little Swift, conspicuous
, from the broad belt of white
ack body, is a very common
maica, where it resides all the
thus described: — Irides dark
black; feet purplish flesh-
a horn-colour; inside of mouth
tinged in parts with bluish.
brown, paling on the sides;
tail-coverts, and tail sooty-
sed, or with slight greenish re-
the tail. Across the rump a
f pure white, the black descend-
m the back, in form of a point;
viding it. Chin and throat
he feathers brown at the base;
black, meeting in a narrow, ill-
cross the breast; medial belly
gia, under tail-coverts, and
of wings smoky black. "Over
ces and savannas of the low-
marshy flats at the seaward
d valleys, as well as the pens of
slopes, this swift-winged sylph
its rushing course in parties of
to fifty or a hundred, often
h other Swallows, performing
ons, circling and turning, cross-
ossing, now darting aloft, now
er the grass, till the eye is
h attempting to follow them.
of its wings, which is scarcely
at of the whole bird, renders
powerful flyer; an attentive
be able to indentify it, when
aerial career, by a more fre-
ence of the rapid vibration of
he momentary winnowing, by
impetus is gained. There is a
ing structure in the sternum of
ich, as far as I know, is unpre-
The sternum, though void of
s, possesses two oblong foramina
one on each side of the middle
and a round one perforating the
ear the front margin. As all
ed by the usual membrane, the
e, the decrease of weight by the
of bone, while the surface for
nt of the muscles of flight re-
dinished."

r then proceeds with an in-
ription of their nests. "I ob-
he, "several small Swallows
some cocoa-nut palms; they
ey flew, a continued twittering
but sweet, which attracted my
commenced a careful search,
, of the under surface of the
padices of one, and at length
ne masses of cotton projecting
the spathes, which I concluded
nests. This conjecture proved
presently I discovered a bird
e of these *masses, which I shot,*
be this white-rumped Swift.
On my lad's attempt to climb the tree, eight or ten birds flew in succession from various parts, where they had been concealed before. The tree, however, was too smooth to be climbed, and as we watched beneath for the birds to return, one and another came, but charily, and entered their respective nests. Although several other cocoa-nuts were close by, I could not discern that any one of them was tenanted but this, and this so numerously; whence I inferred the social disposition of the bird. At some distance we found another tree, at the foot of which lay the dried fronds, spadices, and spathes, which had been, in the course of growth, thrown off, and in these were many nests. They were formed chiefly in the hollow spathes, and were placed in a series of three or four in a spathe, one above another, and agglutinated together, but with a kind of gallery along the side, communicating with each. The materials seemed only feathers and silk-cotton (the down of the *Bombax*); the former very largely used, the most downy placed within, the cotton principally without; the whole felted closely, and cemented together by some slimy fluid, now dry, probably the saliva. * * * All the nests were evidently old ones, for the *Bombax* had not yet perfected its cotton, and hence I infer that these birds continue from year to year to occupy the same nests, until they are thrown off by the growth of the tree. The entrance to the nests, which were subglobular, was near the bottom." Another opportunity afterwards presented itself, and Mr. Gosse became better acquainted with the habitations of the Palm Swift; and he thus describes the nests he had in his possession: "They have a singularly hairy appearance, being composed almost exclusively of the flax-like cotton of the Bombax, and when separated, are not unlike a doll's wig. They are in the form of those watch-fobs which are hung at beds' heads, the backs being firmly glued by the saliva to the under surface of the fronds, the impressions of the plaits of which are conspicuous on the nest when separated. The thickness is slight in the upper part, but in the lower it is much increased, the depth of the cup descending very little below the opening. The cotton is cemented firmly together as in the case of the others, but externally it is allowed to hang in filamentous locks, having a woolly but not altogether a ragged appearance. A few feathers are intermixed, but only singly, and not in any part specially. One specimen is double, two nests having been constructed so close side by side, that there is but a partition wall between them. Many nests had eggs, but in throwing down the fronds all were broken but one, which I now have. It is pure white, unspotted, larger at one end, measuring 13-20ths of an inch by 9-20ths. The average dimensions of the nests were about five inches high, and three and a half wide."

SWIFT [MOTHS]. A name applied by collectors to Moths of the genus Hepialus.

SWORD-FISH. (*Xiphias.*) A genus of Acanthopterygian fishes, the distinguishing

characteristic of which is a long pointed beak, constituting one third of its whole length, and shaped like a straight sword; being a most powerful offensive weapon. They are placed by Cuvier among the *Scomberidæ*, or Mackerel family. The common Sword-fish (*Xiphias gladius*) is sometimes more than twenty feet long, the beak included. It swims with greater swiftness than almost any inhabitant of the deep, and is possessed of vast muscular strength. It attacks and generally puts to flight, the smaller cetaceous animals, notwithstanding its food is usually vegetable. Its flesh is good; and in some countries the fishery is an object of importance. It is taken with the harpoon, and

COMMON SWORD-FISH.—(XIPHIAS GLADIUS.)

usually tears the net, if enclosed. It has not unfrequently happened that a Sword-fish has struck a ship, and driven its sharp weapon through the planking. It is very abundant in the Mediterranean, but less so in the Atlantic. Notwithstanding its formidable weapon, its great strength, and its almost incredible activity, a small crustaceous animal penetrates the flesh of the Sword-fish, and sometimes so torments it, that it dashes itself on the shore with mortal violence. In the Mediterranean it is regularly pursued by the fishermen; and its flesh is much esteemed in some places as an article of food. The female approaches the shores in the latter part of spring or beginning of summer. Mr. Gray has described a fine species of Sword-fish from the Cape of Good Hope, in which the skin is strengthened with bony spicula. It is nearly eleven feet long, and having been found in Table Bay during the visit of Sir John Herschel (the astronomer), has been named *Thrysitreus Herschelii*, in compliment to him. It belongs to a genus subdivided from *Xiphias* by its possessing ventral fins; the caudal fin is furnished on each side with two small prominent crests. The specimen is in the collection of the British Museum.

SYLVIA: SYLVIADÆ. The *Sylviadæ*, or *Warblers*, are a family of small birds, with rather long and slender bills, with the tip slightly curved and toothed; and it contains a large proportion of the species which are most remarkable for their power of song. "The chief peculiarity," observes Mr. Swainson, "which runs through this numerous family, is the very small size and delicate structure of its individuals. Excepting the Humming-birds, we find among these elegant little creatures the smallest birds in the creation. The diminutive Golden-crests, the Nightingale, the Whitethroat, and the Wood-wrens, are all well-known examples of genuine Warblers, familiar to the British naturalist. The groups of this extensive family, spread over all the habitable regions of the globe, are destined to perform an important part in the economy of na[ture]. appears intrusted the subjugat[ion] of numerable colossic insects wh[ich] the bush, the foliage, or the fi[eld] and, thus protected, escape t[he] from swallows, to which they

SYLVIA HORTENSIS

pond during flight. The d[estruction] of such insects renders them nourishment of the thrushes, Insectivorous birds, while the variety only become appare[nt] boughs are shaken and the turled. How enormous them multiplication, had not na[ture] other races of beings to check No birds appear more perfect this purpose than the Warbler writer then notices their a[ctivity] most part, on the first appearance when the insect world is call[ed] activity by the renewal of v[ege]their departure towards sout[h] insect hosts diminish, and c[ease] longer require the agency of th[ese] to keep their numbers within He remarks also, that as diff[erent] are assigned to different tribes a similar diversity of haunts different groups of Warblers.

SYNALLAXIS. The na[me] genus of birds by Vieillot, Swainson in the family of Cr[ows] generic character is thus de[fined] short, strong, and straight; b[ase] of equal thickness, and small wings short, and much roun[ded] marks scarcely exceeding the broad and long, either graduated; the wing loose, the shaft the tips lanceolate; feet very lengthened; the claws slend[er] slightly curved. The SYNALLA[XIS] is given as an example of the g[enus] of the plumage; brown; bea[k] feathers on the front of th[e] pointed, and rufous; irises befo[re] the eye whitish; tail rounde[d]. is remarkable for its very s[ingular] which in the woodland scen[ery] (Brazil) forms a striking objec[t] in low trees, formed externa[lly] sticks, usually three or four [in] resembling at a distance a [large] bees-making Orpheus, in the Isra[elite] desk. [illegible] town of [illegible] as W. [illegible] [illegible], such [illegible]

e side, besides one on the top. Both and female are generally seen near the uttering a shrill, incessant, monoto- chirp, particularly in the morning and ng.

NBRANCHUS. The name of a sub- m of the *Muraenidæ*, or Eel-shaped ; characterized by having the gill- ng entirely single, no pectorals, fins head thick, snout rounded, operculum aginous, with six rays, stomach and perfectly straight, and bladder long arrow. They are found chiefly in tro- seas.

NDACTYLI. The name given to a of Perching Birds, including those have the external and middle toe d as far as the second joint; the word *actyli* indicating the adhesion of the s. The plumage is generally of a ant blue or green colour; and very ih and glossy. [For examples, see Bee- r and Kingfisher.]

NGNATHUS. [See Pipe-fish.]

RPHIDÆ. A family of Dipterous s, generally of a moderate or large and of variegated colours. Many of ecies resemble humble-bees, wasps, &c., are frequently mistaken for them by nexperienced. The proboscis is long, branous, elbowed near the base, termi- by two large lobes, and the sucker ed in an upper canal; a long horny lip, hollow, and notched at the tip; of slender acute maxillæ, and a slender ed tongue; the head is hemispherical, overed for the most part by the eyes, ially in the males: the front of the is often produced into a kind of beak, ing the proboscis when it is folded in ion. They are all fond of flowers: they ith amazing swiftness, and many of if disturbed from their favourite is even for a number of times, will n and continue to hover there again. larvæ of the typical genus *Syrphus* feed all kinds of Aphides, which they often up in the air, and suck very quickly: ody of these larvæ is of an elongate- form, uneven, and sometimes spinose. n ready to metamorphose, they fix selves to leaves or other substances by tinous secretion; the body shorten, s anterior end, which was the slender- comes the thickest.—The larvæ of the *Volucella* are also insectivorous, but in the nests of Humble-bees and e, upon the larvæ of which they sub-

BANUS; TABANIDÆ. A genus amily of Dipterous insects, comprising e large flies, pre-eminently distin- ed for the tormenting powers which eat species possess; piercing the skin, ker to suck the blood, of various quad- s, wild and domesticated. The Ta- e Bovinus of Linnæus is the largest of British species. It has the *appearance* very large *pale brown fly, marked on ck by a series of large, whitish, tri-* angular spots. This insect, like the rest of its genus, is seen during the middle and the decline of summer, generally in the hottest part of the day, and chiefly abounding in woods and pastures. It is extremely troublesome to cattle, piercing their skin with the lancets of its proboscis, and sucking the blood in such a manner as to cause considerable pain. It proceeds from a large, dusky-yellowish larva, marked by transverse blackish rings: it resides under ground, in moist meadows, &c., and changes to a cylindric, brownish chrysalis; out of which, in about a month, proceeds the perfect insect.

TABBY [MOTHS]. A name applied by collectors to Moths of the genus *Aglossa*.

TACHYPETES. [See Frigate-bird.]

TADORNA. A genus of web-footed birds, founded on the *Anas Tadorna* of Linnæus. [See Shieldrake.]

TADPOLE. The Frog in its nascent state. [See Frog.]

TADPOLE-FISH, or LESSER FORKED BEARD. (*Barbus minor.*) A somewhat rare fish of the *Gadidæ* family, measuring about a foot in length, and in its general form and colour bearing some resemblance to the imperfect animal from whom the name is derived. The head is very large, obtuse, and flattened on the crown; the mouth is wide; under the chin there is a small conical barb or feeler; and the lips are rounded and white. Tail wedge-shaped; scales small. It has been taken on the Scottish coast: it spawns in April, and feeds on small insects; but it is too scarce for naturalists to be much acquainted with its history.

TÆNIA. An intestinal worm, belonging to a numerous and, unfortunately, but too well-known a genus. *Tænia solium* is characterized by an extremely long body, flat, and composed of a number of joints or articulations, which sometimes amount to several hundred; the whole animal occasionally attaining the length of five yards or more. They are thinner anteriorly, and generally have a square head, with four small suckers. Their numerous segments are all connected by the nutritive canal, which runs from one end to the other; but the reproductive apparatus is repeated in each division. That only one can exist in one human body at the same time is a vulgar error. Of all intestinal worms they are the most dangerous, and the most difficult to expel.

TÆNIDÆ. The name given to a family of Acanthopterygious fishes, distinguished by their lengthened and flattened bodies, and having very small scales. [See Ribbon-fish.]

TAGUAN. A species of *Pteromys*, or Flying Squirrel.

TAILOR BIRD. A name applied to more than one species of soft-billed Indian Birds, allied to the Warblers. Some of them, if not all, belong to Dr. Horsfield's genera

Orthotomus and *Prinia*. The first described Tailor Bird (*Sylvia sutoria*, Latham) is a native of Ceylon, whence its curious nest is very frequently brought. It is for the most part composed of two leaves, one of them being dead; the latter is fixed by the ingenious bird to the living leaf as it hangs from the tree, by sewing both together, like a pouch or purse; this is open at the top, the cavity being filled with fine down; it is suspended from the branch, so as in great measure to secure it from the attacks of Reptiles and monkeys. Col. Sykes has described another interesting Tailor Bird, from the East Indies. This is the *Orthotomus Bennettii*. It constructs its nest by sewing together the leaves with threads of cotton and with fibres; in some cases, this naturalist found these threads actually knotted at the end. Professor Savi has described the habits of a species of Sylvia (*S. cysticola*), common in various parts of Italy, which constructs its nest among sedges and reeds which it unites together by real stitches; and the edge of each leaf is pierced by this bird with minute holes, through which it passes threads formed of spiders' web, particularly from the silk of their egg-pouches. These threads, as described by the Rev. Mr. Kirby, are not very long, and are sufficient only to pass two or three times from one leaf to another; there are knots scattered here and there, which in some places divide into two or three branches.

TALAPOIN. The name given by Buffon to a species of Monkey, distinguished by its beautiful variety of green, white, and yellow hair. It is the *Cercopithecus Talapoin* of zoologists.

TALBOT. A species of Dog, remarkable for its quick scent, and for its eagerness in pursuit of game.

TALEGALLA. A large gregarious Rasorial bird, which, according to Mr. Gould, may be considered, in a degree, as the representative of the Turkey in Australia. The plumage of the upper parts of the body, wings, and tail, blackish-brown; the feathers of the under parts blackish-brown at the base, becoming silvery-gray at the tip; skin of the head and neck deep pink-red, thinly sprinkled with short hair-like feathers; wattle bright yellow, tinged with red where it unites with the red of the neck; bill black: feet brown. It is about the size of a Turkey; and moves about in small companies. When it is disturbed, it readily eludes pursuit by the facility with which it runs through the tangled bush. If hard pressed, or rushed upon by their great enemy, the native dog, the whole company spring upon the lowermost bough of some neighbouring tree, and, by a succession of leaps from branch to branch, ascend to the top, and either perch there or fly off to another part of the brush. It is remarkable that this bird does not hatch its eggs by incubation. It collects together a great heap of decaying vegetables as the place of deposit of its eggs, thus making a hot-bed, arising from the decomposition of the collected matter, by the heat of which the young are hatched. This mound varies in quantity from two to four cart-loads, and is of a perfectly pyramidical form: it is not, however, the work of a single pair of birds, but is the result of the united labour of many; and the same site appears to be resorted to for several years in succession. "The mode," says **Mr. Gould,** "in which the materials

BROWN TURKEY.—(TALEGALLA LATHAMI.)

composing these mounds are accumulated is equally singular, the bird never using its bill, but always grasping a quantity in its foot, throwing it backwards to one common centre, and thus clearing the surface of the ground to a considerable distance so completely, that scarcely a leaf or blade of grass is left. The heap being accumulated, and time allowed for a sufficient heat to be engendered, the eggs are deposited, not side by side, as is ordinarily the case, but planted at the distance of nine or twelve inches from each other, and buried at nearly an arm's depth, perfectly upright, with the large end upwards: they are covered up as they are laid, and allowed to remain until hatched. I have been credibly informed, both by natives and settlers living near their haunts, that it is not an unusual event to obtain nearly a bushel of eggs at one time from a single heap; and as they are delicious eating, they are eagerly sought after. Some of the natives state, that the females are constantly in the neighbourhood of the heap about the time the young are likely to be hatched, and frequently uncover and cover them up again, apparently for the purpose of assisting those that may have appeared; while others have informed me that the eggs are merely deposited, and the young allowed to force their way unassisted. In all probability, as Nature has adopted this mode of reproduction, she has also furnished the tender birds with the power of sustaining themselves from the earliest period; and the great size of the egg would equally lead to this conclusion, since in so large a space it is reasonable to suppose that the bird would be much more developed than is usually found in eggs of smaller dimensions. The eggs are perfectly white, of a long oval form, three inches and three-quarters long by two inches and a half in diameter." It was originally described by Dr. Latham as a vulture under the name of "the New Holland Vulture," and at first sight a dried skin has considerable resemblance to that of some species of the genus. In Australia it is called

TURKEY, and, as we remarked at ing, it is to the Rasorial order, e Raptorial, that this singularly genus belongs: in the same it are birds with similar habits. ODIUS and LEIPOA.]

: TALPIDÆ. [See MOLE.]

DUA. [See ANT-EATER.]

RA. A group of birds of which veral genera, and numerous spe- uliar to America, and which are for their brilliant colours. They ical beak and short wings; re- the Finches, &c. of Europe and ir conformation and habits, and re of their food.

LUS: TANTALIDÆ. The *Tan-* a family of Wading Birds, the hich inhabit tropical latitudes, st entirely on the swampy banks nd lakes. The genus *Tantalus* takes of the character of the Herons, and is characterized by aving the feet, the nostrils and stork; but the back of the bill, is rounded, and its point curved and slightly notched on each tion of the head, and sometimes k, being denuded of feathers. the American Scarlet *Ibis* (*Ibis* which the following is a descrip- gth twenty-three inches: bill long, thick, and of a somewhat n at the base, gradually bent and sharply ridged; black, ex- he base, where it inclines to red.

RLET IBIS.—(IBIS RUBRA.)

agel. The face naked, slightly ale red. Chin bare, wrinkled nage rich, glowing scarlet, ex- three inches of the extremities outer quill-feathers, which are blue. Legs pale red; the three s united by a membrane as far joint. "This brilliant and ex- merican species," says Nuttall, ithology of the United States,' ts chiefly within the tropics, n the West India and Bahama l south of the *equator, at least as* il. *They migrate in the course* er *(about July and August)* into Florida, Alabama, Georgia, and South Carolina; but retire into Mexico, or the Caribbean islands, at the approach of cool weather. They generally associate in numbers, frequenting the borders of the sea, and the banks and æstuaries of neighbouring rivers, feeding on small fry, shell-fish, crustacea, worms, and insects, which they collect at the ebbing of the tide. They are said to be in the habit of perching on trees in companies; but they lay their eggs, which are greenish, on the ground, amidst the tall grass of the marshes, on a slight nest of leaves. When just hatched, the young are black, soon changing to gray, but are nearly white before they are able to fly; by degrees they attain their red plumage, which is not complete until the third year. The young and old associate in distinct bands. In the countries where they abound, they are sometimes domesticated, and accompany the poultry. The Ibis shows great courage in attacking the fowls, and will even defend itself from the insidious attacks of the cat. It is generally esteemed as good food; and its rich and gaudy plumage is used by the Brazilians for various ornaments." [See IBIS.]

TANYSTOMA. The name of a group of Dipterous insects, comprehending those which have a projecting proboscis, with the last joint of the antennæ undivided.

TAPE-WORM. [See TÆNIA.]

TAPIR. The name of a genus of Pachydermatous quadrupeds, of which three species are at present known; two of them being natives of South America, whilst the other inhabits Sumatra and Malacca. In its general form and contour, the Tapir reminds us of the Hog; but it is sufficiently distinguished from that animal by its snout, which is lengthened into a flexible proboscis, that looks like the rudiment of the trunk of the elephant, and partly serves the same pur-

AMERICAN TAPIR.—(TAPIRUS AMERICANUS.)

pose. The anterior feet have four toes, but the posterior only three; and these have only their tips cased in small hoofs. The eyes are small and lateral, and the ears long and pointed. The incisor teeth are six in number; the canines small; and the molars are seven on each side of the upper jaw, and six in the lower. The common AMERICAN TAPIR (*Tapir Americanus*) is the largest animal of South America, and is found in all parts of that continent, though most abundant in Guiana, Brazil, and Paraguay.

It is of a deep brown colour throughout, approaching to black; between three and four feet in height, and from five to six in length. The hair of the body is scanty, very short, and closely depressed to the surface; scarcely distinguishable at a short distance. The inmost recesses of deep forests are the chosen haunts of this species, which is not gregarious, and shuns the society of man. It is for the most part nocturnal in its habits, sleeping or remaining quiet during the day, and at night seeking its food, which, in its natural state, consists of shoots of trees, buds, wild fruits, &c. It is, however, when in confinement, an indiscriminate swallower of every thing, filthy or clean. Its enormous muscular power, and the tough thick hide which defends its body, enable it to tear its way through the underwood in whatever direction it pleases. Its ordinary pace is a sort of trot; but it sometimes gallops, though awkwardly, and with the head down. It is very fond of the water, and frequently resorts to it. Its disposition is peaceful and quiet; and though it will defend itself vigorously, and in so doing inflict severe wounds with its teeth, it never attempts to attack either man or beast, unless hard pressed. The flesh is dry, and has a disagreeable flavour.

The MALAY TAPIR (*Tapirus Malayanus*) in its general form resembles the American, and has a similar flexible proboscis, which is six or eight inches in length. Its general appearance is heavy and massive: the skin is thick and firm, thinly covered with short hair; the eyes are small; the ears roundish, and bordered with white. The tail is very short, and almost destitute of hair; and it has no mane on the neck. Legs short and stout; the fore feet furnished with four toes, the hind feet with three. The general colour is glossy black, with the exception of the back, rump, and sides of the belly, which are white, and separated by a defined line from the parts that are black. It is a native of Sumatra, and was first described by Sir Stamford Raffles.

TAPIRIDÆ. The first family of pachydermatous quadrupeds, including the Rhinoceros, Tapir, Hyrax, and several extinct genera occasionally found in a fossil state.

TARANDUS. [See REINDEER.]

TARANTULA. (*Lycosa tarantula.*) A species of Spider found in some of the warmer parts of Italy, whose bite produces a train of symptoms long believed to be only curable by music (and still exercising the faith and ignorance of the vulgar in some countries), is the largest of all the European Spiders, and is generally found in dry and sunny plains. When full grown, it is as large as a chestnut; and, like all the Spiders, has a poison-gland in its mandibles. It is of a brown colour, with the back of the abdomen marked by a row of trigonal black spots with whitish edges, and the legs marked beneath by black and white bars. In the present enlightened period it may be sufficient to observe that the extraordinary symptoms supposed to ensue from the bite of this insect, as well as their supposed cure, ar
foundation. We may, ho
to give some account of
symptoms &c. formerly s
buted to it: we therefore
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particulars: "The bite of

TARANTULA.—(LYCOSA

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hours the patient feels a n
part affected is marked w
circle, which soon after
painful swelling: shortly
into a profound sadness, br
difficulty, his pulse grow
senses fail. At length he
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sion for black and blue;
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music, which reason perh
have pointed out, is said
more efficacious. No soon
affected lost his sense and
musician tries several tun
ment; and when he has
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and begins to dance, his a
vity still increasing. Some
dance for six hours with
After this the patient is
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from his first dance, he is a
by the first tune, in order t
exercise is reiterated for s
cessively; seven or eight a
time the patient finds hi
fatigued, and unable to d
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for, as long as the poison
would dance, if encourage
through extreme lassitude.
self thus tired, he begin
reason; and awakes, as

allest recollection of
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gular genus of Marsu-
King George's Sound,
species of which is as
a longish muzzle, and
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nus of Quadrumanous
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ectivorous regimen of
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nd tufted; large mem-
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maxus of Fischer, and

RAVCANUS.

field. These animals
ight, and retire by day
trees; feed chiefly on
at two feet at a spring;
d capable of some at-
dd their prey in their
rest on their haunches;
at a birth, and live in

OW SHRIKE. (*Gym-*
This animated and
tive of Van Diemen's
enlivening by its pre-
he country. Mr. Gould
and occasionally hops,
h great quickness, but
nd upon alighting on a
loses one wing several
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When on the plains it
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ne, which has obtained
e of the Organ-Bird.

It is very easily tamed; and as it possesses the power of imitation in an extraordinary degree, it may be readily taught to whistle tunes as well as to articulate words; it consequently soon becomes a most amusing as well as ornamental bird for the aviary or cage." The male has the crown of the head, cheeks, throat, all the under surface, scapularies, primaries, and tips of the tail jet black; nape of the neck, back, upper and under tail-coverts, and base of the tail-feathers white; bill dark lead colour at the base, passing into black at the tip; legs black; irides bright hazel. In the female the nape of the neck and back are gray. It builds a round cup-shaped nest on the topmost branches of the gum-tree, constructing it awkwardly of sticks interspersed with strips of bark, &c., and lining it with coarse grass, sheep's wool, and a few feathers, felted together, and forming a dense and warm receptacle for the eggs, which are of a greenish ashy gray colour, spotted and blotched with umber-brown and bluish-gray.

TASMANIAN HONEY-EATER. [See MELIPHAGA AUSTRALASIANA.]

TATOU. The native name for the giant armadillo of South America (*Priodonta gigas*). [See ARMADILLO.]

TAXICORNES. An extensive group of Heterimerous Coleoptera; two or three genera of which are natives of this country. The greater part of the beetles composing this family live on *fungi*, and are either found upon them, or beneath the bark of trees which produces them. A few live on the ground under stones. They are dis-

DIAPERIS BOLETORUM.

tinguished by having no corneous hook on the inner edge of the maxillæ: they are generally furnished with wings: the antennæ are usually inserted beneath the margin of the sides of the head, and more or less perfoliated, and gradually thickened or ending in a club. We figure a species of the genus *Diaperis* as an example of this group. Most of the species are of a small size.

TAXUS. [See BADGER.]

TEAL. (*Querquedula crecca.*) The common Teal is a small species of duck that frequents ponds, marshes, and the reedy shores of creeks, inlets, and rivers, but rarely visits the sea-shore. It is about fifteen inches in length: the beak is dusky: the top of the head, cheeks, and neck are chest-

nut-red; the throat is black; a broad green band extends from the eyes to the nape; the lower part of the neck, back, scapulars, and sides are alternately striped with zigzag lines of white and black; the breast is reddish, and spotted; the belly a yellowish white; the speculum of the wings is half white, half black, and edged with two white bands: the legs are ash-coloured. The female is smaller than the male, and has a

COMMON TEAL.—(QUERQUEDULA CRECCA.)

reddish-white band, spotted with brown, behind and beneath the eyes; the throat is white; the plumage above is blackish-brown, edged with a broad band of clear brown; and the under parts are whitish. This species is a native of the north, occurring equally in Europe and America: it is very abundant in England during its migration; but it does not appear usually to breed here, although its nest is sometimes met with, and is said to be not uncommon in France. The nest is large, and is composed of soft dried grasses, lined with feathers, and generally concealed in a hole among the roots of reeds and rushes near the water's edge. The female lays about a dozen reddish-white eggs, which are indistinctly sprinkled with brown dots, and in size about those of a pigeon. The Teal is widely and numerously dispersed over the whole of Norway, Sweden, and Lapland: it is abundant in Germany, Holland, France, Spain, and Italy; it is also found in the winter in considerable numbers in Ireland: and sometimes it inhabits the edges of the Scottish lakes. The flesh is dry and difficult of digestion, but, notwithstanding, is in great request. In the reign of Henry VIII. it held a high place among the luxuries of a royal banquet.

The Blue-winged Teal (*Querquedula discors*), says Wilson, in his 'American Ornithology,' is the first of its tribe that returns to us in the autumn from its breeding place in the north. They are usually seen early in September, along the shores of the Delaware, where they sit on the mud close to the edge of the water, so crowded together that the gunners often kill great numbers at a single discharge. When a flock is discovered thus sitting and sunning themselves, the experienced gunner runs his batteau on shore at some distance above or below them, and, getting out, pushes her before him over the slippery mud, concealing himself all the while behind her; by this method he can sometimes approach within twenty yards of the flock, among which he generally makes great slaughter. They fly rapidly, and, when they alight, drop down suddenly, like the snipe or woodcock, among the reeds or on the mud. They feed chief food, and are eagerly fond of reeds or wild oats. Their fle and, after a residence for a sh the reeds, they become very fa frosts come on, they proceed being a delicate bird, very sus They abound in the inundate the southern States, where are taken in traps placed on nences that here and there water. These places are stre and they are caught alive in This species is a trifle smaller ceding: the bill is long, and slate colour; the front and the head are black; from t chin is a large crescent of wh the head and half the neck slate, richly glossed with gre remainder of the neck and br dusky, thickly marked with brownish white, elegantly ba other; belly, pale brown, barr in narrow lines; back, deep b each feather waved with larg brownish-white; lesser wing-c light blue; primaries, dusky culum, or beauty-spot, rich edged with black or light blu down their middle with wh pointed: legs and feet yellow

TELEOSAURUS. The w group of extinct Reptiles all coidles, the fossil remains o been found in this country. long muzzle, somewhat resem the Gavial, or Gangetic Croco

TELEPHORUS; TELEP genus and family of Coleoptera a long and narrow form, with and elytra; head broad and under the thorax; mandibl curved; and the antennæ slen

SOLDIERS BEETLE.—(TELEPHO

long, and inserted closely to insects, which are known by *Soldiers, Sailors,* or *Doctors,* a spring in considerable numbers especially those of the *Umbell* thus are they, that they not o other insects, but the weaker species fall a prey to the s walk excessively, with their

ELESCOPE FLY. [See DIOPSIS.]

ELLINA; TELLINIDÆ. A genus and ily of bivalve Molluscs, which have in centre of the hinge a tooth on the left two teeth on the right, often bifid, and verse distance in front and behind; on right valve a lateral tooth or plate, which s not penetrate into a cavity of the oppo- one. There is a slight fold near the enity of both valves, which renders n unequal in that part, where they gape tle. The animal has two long tubes, ratory and excrementitial, which can withdrawn into the shell, and concealed duplicature of the mantle. The shells generally transversely striated, and beau- ly coloured; some are oval and thick- ; others are oblong and much compressed; rs lenticular. Instead of a fold, we

CAT'S-TONGUE TELLINA. (TELLINA LINGUA-FELIS.)

n find in the latter merely a deviation he course of the transverse striæ. Sow- y says, "The irregular flexuosity of the erior ventral margin appears to have n constantly regarded as the principal inguishing character of this beautiful us; and when we consider the number species possessing this character, and eing also in other general circumstances, ay perhaps be still considered the essen- character of the genus."

ENCH. (*Tinca vulgaris.*) A fish be- ging to the Cyprinoid family, or Carp s; common in most of the lakes of the ropean continent, and more or less abun- t in ornamental waters and ponds in this ntry, but is seldom found in our rivers, g more fond of still and muddy waters. general length is about twelve inches; ual colour a deep olive, accompanied

TENCH.—(TINCA VULGARIS.)

a slight golden tinge; the abdomen being er or yellower than the other parts, and ins, which are thick and opaque, of a l violet colour. The body is short and k; and the skin is covered, like that of eel, with a tenacious mucus or slime, neath which *its small and numerous* scales ear; *the head is rather large, the eyes ll, the lips thick, and on each side of the* mouth is a small cirrus. It is considered as a very prolific fish, and of quick growth. It deposits its spawn, consisting of very small greenish ova, among aquatic plants, &c.; this takes place about the middle of June, when the female is attended by two males. By some it is supposed to lie during the winter in a torpid state, concealed beneath the mud of the waters it inhabits, being rarely taken during that season. We glean from Mr. Yarrell the following observations: "As the Tench is one of our most useful fresh-water fishes, from the ease with which it may be preserved and its increase promoted, the facility of transportation from its great tenacity of life, and the goodness of its flesh, — which is not, however, generally held in the estimation which I think it deserves, — as the Tench is also, like the Carp, one of those species first selected as stock for ornamental waters, I venture to recommend that large and fine fish be chosen as breeders, as the most certain mode of obtaining sizeable fish for table in the shortest space of time. Two males to one female, or not less than three to two, should be the proportion of the sexes; and from the pond which is found by experiment favourable for breeding, the small fish should be in part withdrawn from time to time, and deposited elsewhere, to afford more space for all. The male of the Tench is recognized by the large size of the ventral fins, which reach far enough to cover the vent, and are deeply concave internally: in the females the ventral fins are smaller, shorter, and less powerful."

A most beautiful variety, called the GOLDEN TENCH, is found in some parts of Germany, differing from the common Tench in being of the richest orange-yellow, variegated with small black spots, while the fins are thin, transparent, and of a bright red colour. It is said to be of slow growth, and to live, like most others of this genus, on worms, water insects, &c. These Tenches are delighted with warmth, and in bright weather are observed to swim in small shoals near the surface.

TENEBRIONIDÆ. A family of Coleopterous insects, distinguished by having the elytra not soldered together, with the wings fitted for flight. The body is generally oblong or ovate; depressed, or but slightly elevated; the thorax square or trapeziform; and the palpi enlarged at the tip, the last joint being generally hatchet-shaped. One of the most familiar of these is the *Tenebrio molitor*, the larva of which is commonly called the MEAL-WORM, and may be regarded as the type of the family. This insect frequents corn-mills, granaries, bake-houses, &c., doing much damage by devouring flour, meal, bran, &c. It is also very destructive to ship-biscuits packed in casks, which when opened are found eaten through in holes by these insects and their larvæ. The latter are about an inch long, of a cylindrical and linear form, very smooth and glossy, of a fulvous colour, consisting of twelve segments, exclusive of the head, which is provided with short tooth, and a pair of very small antennæ. This larva

MEAL-WORM BEETLE.
(TENEBRIO MOLITOR.)

at first being of a reddish-colour, but soon assuming its black hue. The larvæ of these insects are greedily devoured by nightingales and other insectivorous birds, and are accordingly bred by bird-fanciers; it is necessary to keep the vessels in which they are placed firmly closed, or they make their escape, neither wood nor cloth being sufficiently strong to prevent them from boring their way through.

TENREC. (*Centetes.*) A genus of small insectivorous quadrupeds found in Madagascar, closely resembling the Hedgehog in their general character, but differing in their dentition, the feebleness of their spines, and in their being much less able to roll themselves into a ball. The Tenrec is known also by the name of the ASIATIC or STRIPED HEDGEHOG. It is seven inches in length; and is characterized by a long, pointed muzzle; short legs, with five toes on each foot, separated and armed with crooked claws; and no tail. It is of a black colour; with five longitudinal bands on the body: all the black parts are covered with hard hair; the white bands with small prickles. From the black bands on the back spring long scattered hairs which reach to the ground; the head is covered with short black hairs or prickles; the snout is white; the eye surrounded by a white circle; and the feet are reddish. The Tenrecs move slowly; grunt like pigs, (for which reason they are sometimes called Ground-hogs or Pig-porcupines): they grow extremely fat; multiply prodigiously; and burrow under

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are a place for the deposition of their here the maggot may be incubated in and upon its exclusion be surrounded ady organized matter adapted for mance. Some genera select vegeta- the parasitic support of their young, (Linn.), which infests the pine-tree; pinus (Latr.), which perforates the corn for the purpose of oviposition. as the ichneumons, pierce the skins ts, and deposit their eggs in the sub- ous fatty and nutrient material.—

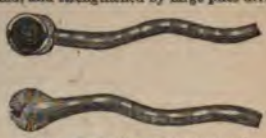
[NEUMONIDÆ.]

EBRATULA. A genus of Conchi- Molluscs, found at great depths in thern Ocean, and also in the Euro- as. The animals have a curious kind rnal skeleton, as it may be termed, ng of a slender, flattened, calcareous rith other pieces diverging from it; iliated appendage on each side of the The shell is inequivalve, equila- val or sub-trigonal, ventricose or com- , adhering by a short gelatinous ten- bur figure, which exhibits a species of hesive genus, shows the peculiarity

TEREBRATULA GAUDIONAUDII.

ture above alluded to; the upper epresenting the whole shell and the wer cuts, the insides of each valve. re numerous species of this Mollus- ous, of various forms, and some of uriously ribbed, found in a fossil

EDO. The name given to a genus of ous molluscs, which form their habi- by boring holes in submerged timber, reby occasion destructive ravages in bottoms, sunken piles, &c. The *Te- redo* is worm-shaped, and about six long. In making its excavations into od, which it does by boring into the ce in the direction of the grain, each mal is careful to avoid the tube formed eighbour, and often a very thin leaf f wood is left between; it also, when occurs in its path, makes a turn to . It is commonly supposed that this so injurious to mankind, was intro- nto Europe from warmer climates; wever that *may be, it now unfor- y swarms in our seas. The rapidity* of its growth, and the destructive celerity with which it works, are hardly credible. In Holland, in order to prevent the irruption of the sea, where the land is below the level of high water, immense dykes are constructed along the shore, formed of large masses of sand, and strengthened by large piles driven



SHIP-WORM.—(TEREDO NAVALIS.)

into the ground. In the year 1730 it was discovered that these piles were attacked by the Teredo, and, on examination, were found to be pierced in all directions to such an extent, that, had it not been for a timely discovery of the mischief, the whole of that part of the country might have been overwhelmed by the sea breaking through the worm-eaten defences. The only effectual way of preventing the attacks of the Teredo upon piles is said to be by covering all that part which is continually beneath the surface with short broad-headed nails: the action of the sea-water on the nails producing a strong coating of rust, said to be superior to a copper sheathing.—Another species, the *Teredo gigantea*, is described by Sir Everard Home as sometimes exceeding four feet in length and several inches in circumference.

TERMITIDÆ. An extensive and important family of the Neuropterous order of Insects, to which the name of *White Ants* is very commonly given. Some few species are found in temperate regions, but they are chiefly confined to the tropics, where they perform a considerable share in the necessary operation of completing the comminution and destruction of dead and decomposing organized matter. Next to Locusts, they may be reckoned the most destructive insects known to Man. They are characterized by four-jointed tarsi; but the wings are carried horizontally on the body, and very long; the head rounded, and the prothorax short and square. The body is depressed, with the antennæ short; the mouth very similar to that of the *Orthoptera*, with the four-cleft lower lip; three ocelli; the wings slightly transparent, coloured, with the nervures forming a close network; and the legs short. They live in societies, often prodigiously numerous, and, like the Bee and the Ant, are composed of three sorts of individuals. In all the stages of their existence, save that of the ovum, they are active, carnivorous or omnivorous; and are, beyond all doubt, the greatest pest of tropical climates; destroying all articles of furniture made of wood, cloths, &c., and even entering the foundations of houses, and eating out the whole interior of the timbers, so that while they appear perfectly sound externally, they will fall to pieces under the slightest blow. One species is celebrated for the edifices it rears, to the

form of a sugar-loaf, ten or twelve feet in height, and so solid that the wild cattle mount upon them without breaking through. Internally they are divided into numerous apartments, and have subterranean galleries connected with them, from the extremities of which the insects issue. But, so extraordinary is the whole history and economy of these insects—so wonderful their habits and instincts—that, in order to do justice to the subject, we feel ourselves under the necessity of inserting, with but little abridgment, Mr. Smeathman's celebrated 'Account of the Termites of Africa.'

These insects (he observes) have generally obtained the name of Ants from the similarity in their manner of living, which is in large communities, that erect very extraordinary nests, for the most part on the surface of the ground, from whence their excursions are made through subterraneous passages or covered galleries, which they build wherever necessity obliges, or plunder induces, them to march above ground, and at a great distance from their habitations carry on a business of depredation and destruction, scarce credible but to those who have seen it. But notwithstanding they live in communities, and are, like the Ants, omnivorous; though, like them, at a certain period they are furnished with four wings, and emigrate or colonize at the same season; they are by no means the same kind of insects, nor does their form correspond with that of Ants in any one state of their existence, which, like most other insects, is changed several times. They resemble the Ants also in their provident and diligent labour, but surpass them as well as the Bees, Wasps, Beavers, and all other animals which I have ever heard of, in the arts of building, as much as the Europeans excel the least cultivated savages. It is more than probable they excel them as much in sagacity and the arts of government; it is certain they show more substantial instances of their ingenuity and industry than any other animals; and do, in fact, lay up vast magazines of provisions and other stores.

The different species of this genus resemble each other in form, in their manner of living, and in their good and bad qualities; but differ as much as birds in the manner of building their habitations or nests, and in the choice of the materials of which they compose them. There are some species which build upon the surface of the ground, or part above and part beneath, and one or two species, perhaps more, that build on the stems or branches of trees, sometimes aloft at a vast height. Of every species there are three orders; first, the working insects, or *labourers;* next, the fighting ones, or *soldiers*, which do no kind of labour; and, last of all, the winged ones, or *perfect insects* (called kings and queens), which are male and female, and capable of propagation. These neither labour, or toil, or fight, being quite incapable of either, and almost of self-defence; and nature has so ordered it, that they emigrate within a few weeks after they have arrived at this state, and either establish new kingdoms, or perish within a day or two.

The Termes bellicosus is the be best known species on the coast of this account of the Termites is taken from observations made there nests of this species are so numerou the island of Barranas, and the adja tinent of Africa, that it is scarcely to stand upon any open place, such plantation or other clear spot, whe move of these buildings is not to within fifty paces. In some parts o gal, as mentioned by Adanson, their magnitude, and closeness of situati them appear like the villages of the These buildings are usually terra

ANT-HILL OF TERMES BELLICO

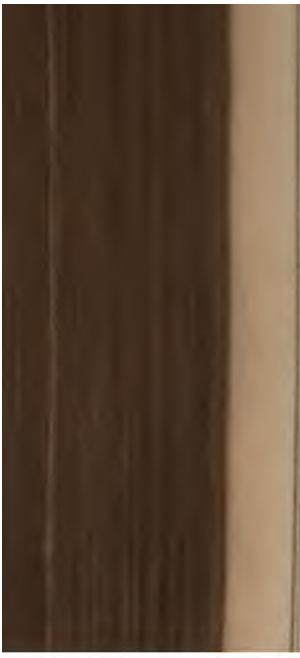
from their outward appearance, that of little hills, generally pretty the form of sugar-loaves, and abou twelve feet in height. These hills quite bare until they are six or e high; but in time become, like th the earth, almost covered with g other plants; and in the dry seas the herbage is burnt up by the ra sun, they somewhat resemble v haycocks. The exterior of the build sists of one large dome-shaped abo and strong enough to enclose and d interior from the weather, and to pr inhabitants from the attacks of mos enemies. It also serves to collect serve a regular degree of genial war moisture; which in all probability necessary for hatching the eggs. T rior is divided, with great regula contrivance, into a great number ments; some of which are intende residence of the kings and queens, the rearing of their numerous whilst others serve as magazines always well filled with stores and p These hills make their first appearan ground by a little turret or two in t of sugar-loaves; which only rise height of a foot, or a little more. S wards, at some little distance, while mer are increasing in height and Termites raise others, and so go on ing the number, and widening the base, till their works below are cov these turrets, which they always highest and largest in the middle, filling up the intervals between eac collect them, as it were, into an

not very curious or exact about
ets, except in making them very
trong; and when, by the junction
he dome is completed (for which
e turrets answer as scaffolds), they
the middle ones entirely, except
which, joined together, form the
he cupola; and they apply the
building of the works within, or
fresh turrets for the purpose of
hillock still higher.

al chamber, so called on account
g adapted for, and occupied by,
nd queen, appears to be thought
consequence, being always situ-
r as possible to the centre of the
It resembles the shape of half an
gthways, or an obtuse oval, and
ot above an inch long; it is after-
wever, increased to six or eight
even more, being always in pro-
the size of the queen, who, increas-
as in age, at length requires a
such dimensions. The floor and
s chamber are very solid, and are
of hardened clay. Its walls are
several door-ways or entrances,
equal distances from each other,
ficient size to admit the soldiers
ers, but not large enough to allow
nd the queen (the latter being, at
thousand times the weight of a
ass out. Surrounding the royal
re a number of others, of different
d sizes, but all of them arched:
occupied by the soldiers and la-
at guard the pair, on whose safety
ir happiness, and probably even
nce, of the whole community.
rtments, being connected together
s and passages, form an intricate
which extends a foot or more in
rom the royal chamber on every
they are surrounded by the maga-
nurseries. The former are cham-
; and are always well fitted with
provisions, which appear to consist
s or other thick juices of plants.
ries, which are so called because
invariably found to contain eggs
ones, are entirely composed of
terials, seemingly joined together
. These nurseries are exceedingly
nd divided into very small irre-
aped chambers, not one of which
nd half an inch in width. They
as near as possible to the royal
. When the nest is in the infant
are close to the royal chamber;
process of time, the queen enlarges,
necessary to enlarge this chamber
mmodation; and as she then lays
number of eggs, and requires a
mber of attendants, so is it neces-
arge and increase the number of
nt apartments; for which purpose,
nurseries that were first built are
ieces, and are rebuilt a little far-
The nurseries are always found
ergrown with mould, and plenti-
kled with white *globules, about
a small pin's head. These may at
taken for eggs; but on being exa-*
mined under a microscope, they evidently appear to be a species of fungus, in shape like a young mushroom. The nurseries are enclosed in chambers of clay, like those which contain the provisions, but much larger. In the early state of the nest they are not larger than a hazel nut; but in old hills are often as large as the head of a child a year old. Under the dome is a large open space, which is surrounded by three or four large gothic-shaped arches, which are sometimes two or three feet high in front of the area, but diminish very rapidly as they recede from thence, and are soon lost among the innumerable chambers and nurseries behind them. There are, comparatively speaking, few openings into the great area, and they, for the most part, seem intended only to admit into the nurseries that genial warmth which the dome collects.

The subterraneous passages which run under the lowest apartments in the hill, in various directions, are of an astonishing size, being wider than the bore of a large cannon. These passages or galleries, which are very thickly lined with the same kind of clay of which the hill is composed, ascend the inside of the external shell in a spiral manner, winding round the whole building up to the top, and intersecting each other at different heights, opening either immediately into the dome in various places, or into the interior buildings, the new turrets, &c., and sometimes communicating therewith by other galleries of different diameters, either circular or oval. Under the ground there are a great many which lead downwards by sloping descents, three and four feet perpendicularly among the gravel; from this the labouring Termites cull the finer parts, which being worked up in their mouths to the consistence of mortar, form that solid clay or stony substance of which all their hills and buildings, except the nurseries, are composed. Other galleries again ascend, leading out horizontally on every side, and are carried under ground, near to the surface, a vast distance; for if you destroy all the nests within a hundred yards of your house, the inhabitants of those which are unmolested further off will nevertheless carry on their subterraneous galleries, and invade the goods and merchandize contained in it, by undermining them, and do great mischief if you are not very circumspect. Sometimes their passages cannot be continued under ground in the required direction; and the Termites then make pipes or covered ways along its surface, composed of the same materials as the nests. These they continue, with many windings and ramifications, for great lengths; and they construct, where it is possible, subterraneaan pipes running parallel with them, into which they may sink and save themselves, if their galleries above ground are destroyed by violence, or the tread of men or animals alarm them.

As we before observed, each community of Termites consists of a king and queen, soldiers, and labourers. The labourers are the most numerous, there being at least a hundred of them to one soldier; they are about a quarter of an inch long, run ex-



s in a large nest may be four or five
ant, in a straight line, and conse-
much farther by their winding gal-
Here, after they are hatched, the
re attended and provided with every
cessary, until they are able to shift
selves, and take their share of the
of the community.
a person accidentally enters any
grove, where the ground is pretty
ered with their arched galleries, the
give the alarm by loud hissings,
may be distinctly heard at every
on after this, their galleries may be
in vain for the insects; but little
e found, just large enough to admit
escape into the subterraneous roads.
alleries are of sufficient size to allow
mites to pass and repass without
each other (though there are always
e passengers), and to shelter them
from light and air, as well as from
emies,—of which the Ants, from
e most numerous, are the most for-
If the Termites are dislodged from
ered ways, the various species of Ants
are probably as numerous above
as the Termites are in their subter-
passages) instantly seize and drag
ay to their nests, to feed their young
The Termites are, therefore, exceed-
dicitous about preserving their co-
ays in good repair; and if one of
e demolished for a few inches in
it is wonderful how soon they will
it. At first, in their hurry, they run
open part an inch or two, but stop
only that it is evident they are sur-
for though some will run straight
get under the further part of the
quickly as possible, most of them
k as fast, and very few will venture
that part of the gallery which is
overed. In a few minutes they may
rebuilding the arch; and even if
four yards of their gallery have been
d, it will be restored by the next
, and will be found to contain nu-
Termites passing along in both di-
If the gallery be several times
d, they will at length seem to give
oint, and build another in a different
a; but if the old one led to some
e plunder, they will rebuild it again
e days; and unless the nest be de-
they will never totally abandon
llery.
Termites generally make their ap-
e to the nest under ground, descend-
ow the foundations of houses and
several feet from the surface, and
gain either in the floors, or entering
ottoms of the posts of which the sides
uildings are composed, following the
of the fibres to the top, and having
perforations or cavities here and
While some of them are employed
ing the posts, others ascend from
tering a rafter or some other part of
in search, as it would seem, of the
which appears to be their favourite
nd if they find it, they bring up wet
d build galleries through the roof in
various directions, as long as it will support them. In this manner a wooden house is speedily destroyed; and all that it contains is, at the same time, subjected to the ravages of these destructive insects. In carrying on this business, they sometimes find, by some means or other, that the post has a certain weight to support, and then, if it is a convenient track to the roof, or is itself a kind of wood agreeable to them, they bring their mortar; and, as fast as they take away the wood, replace the vacancy with that material, which they work together more closely and compactly than human strength or art could ram it. Hence, when the house is taken to pieces, in order to examine if any of the posts are fit to be used again, those made of the softer kinds of wood are often found reduced almost to a shell; and almost all of them are transformed from wood to clay, as solid and as hard as many kinds of stone that is used for the purposes of building.

Another African species (*Termes arborum*) builds its nest among the branches of trees, sometimes at the height of sixty or eighty feet from the ground. They also frequently establish their nests within the roofs and other parts of houses, to which they do considerable damage if not timely extirpated. They are not, however, so destructive or so difficult to be guarded against as the species we have been so minutely describing.

TERN. (*Sterna.*) A genus of web-footed birds readily distinguished by the great length of their wings and their forked tail, as well as by the form of their beak. Their nourishment consists almost exclusively of small live fishes, which they seize upon while on the wing, descending like a shot to the water, and capturing their prey. They are pretty generally diffused over the globe, and are abundant in the temperate regions. There are several species.

The COMMON TERN, GREAT TERN, or SEA-SWALLOW. (*Sterna hirundo.*) This bird is upwards of fourteen inches in length: the bill is crimson, tipped with black, and about two inches and a quarter long; the forehead, top of the head, and the long occipital feathers are deep black; the hinder part of the neck, the back, and wings, are bluish-ash: the under parts are pure white, the breast excepted, which is slightly shaded: the tail, which is long and greatly forked, is white, except the two outside feathers, which are black on their exterior webs; the legs and feet are red. This clean-looking pretty bird is common in the summer months on the sea-coasts, rivers, and lakes of the British isles, and is also met with in various parts of Europe and Asia. The female forms her nest in the moss or long coarse grass, near the lake, and lays three or four eggs of a dull olive, marked with different sized black spots at the thicker end. It is a bold bird, and during the period of incubation will attack any person approaching too near its nest.

"The flight of the Great Tern," says Wilson, "and, indeed, of the whole tribe, is not in the sweeping, shooting manner of the land

have an oblique slightly-waved elongate orange band, with black inner and white outer margin: the anal angle is spotted with black, and the cilia on the anal areolets have a fuscous stripe: the body is brown above, cinereous beneath; the antennæ black, annulated with white. Caterpillar green, with oblique yellowish streaks on the sides, and two yellow dorsal lines: it feeds on the birch and blackthorn: the chrysalis is reddish-brown, with paler streaks.

THORNBACK. (*Raia clavata.*) A well-known fish of the *Raiadæ* family, which grows to a very considerable size, though rarely equal in magnitude to the Skate. It is an inhabitant of the Mediterranean; and is taken in great abundance in the spring and summer (when it visits the shallows for the deposition of its eggs) on the Cornish coast, and also on the coasts of Scotland and Ireland. The colour of the skin is brownish

THORNBACK.—(RAIA CLAVATA.)

gray, with irregular dusky variegations; and of a rough or shagreen-like surface: the under part is white, with a slight cast of flesh colour. Its whole upper surface is covered with strong curved spines, which are most conspicuous down the middle and on each side of the back, where four or six of much larger size than the rest are generally seen. The back is marked with a number of pale round spots, of different sizes, and which are commonly surrounded with a dark-coloured edge. Along the middle of the back runs a single row of strong spines, continued to the tip of the tail; and it often happens that there are three, or even five rows of spines on this part. The tail is furnished with two membranous fins on the upper central ridge, and ends with a small dilatation. The Thornback is in the best condition for table about November. They feed on various other fish, particularly flat-fish, testaceous mollusca, and crustacea.

THORN [MOTHS]. A name given by collectors to Moths of the genus *Geometra*.

THRUSH. (*Turdus.*) Birds of the family *Turdidæ*, or Thrushes, are extremely numerous, and are found in nearly every part of the world; the several species being adapted to almost every climate. They generally frequent the fields and pastures for their food, which usually consists of soft animal and vegetable substances, as berries and other fruits, worms, and snails. Some species are remarkable for their power and variety of song, and others for their powers of imita-

tion. Their nests are generally c
on the branches of trees, and m
species lay from four to six eggs.
the beak arcuated and compress
point is not hooked. Their hal
general solitary; but the majority
are gregarious during the winter.
males of all the Thrush kind, tho
what less brilliant, are very simila
mage to the males.

The SONG-THRUSH, MAVIS, or T
(*Turdus musicus*), is a well-known
admired bird in this country, cha
not only with the sweetness, but t
of its song, which it commences ea
spring, and continues to the beg
autumn. It measures nine inches
its beak is dusky, the under man
lowish at the base: head, and up
of the body, yellowish brown, w
obscure dusky lines on the former:
neck, and sides are yellowish;
white, spotted with dusky; and
men white: the under wing-co
orange yellow: legs light brown.
of the Song-thrush consists of in
berries; it is also particularly fond
the shells of which it breaks agai
The female builds her nest ge
bushes; it is composed of dried
green moss, with a little earth or
mixed, and lined with rotten wood
four or five eggs, of a pale blue colo
with dusky spots on the larger en

Bewick says, that although thi
not considered migratory with
nevertheless, been observed in som
great numbers during the spring an
where not one was to be seen in t
which has induced an opinion
either shift their quarters entirel
shelter in the more retired parts of
They have been observed to pas
Courland, Prussia, &c. in great n
their way to the Alps: and in Fr
are migratory, visiting Burgundy
grapes are ripe, and committing gr
among the vineyards.

In the Journal of a Naturalist,
of this bird are thus pleasantly
"The Throstle is a bird of great
garden where wall-fruit is grown,
of the peculiar inclination which
feeding upon snails, and very mu
he does dislodge in the course
When the female is sitting, the
seems to be particularly assiduous
ing them out, and I believe he
mate during that period, having
seen him flying to the nest with
before the eggs were hatched:
time the united labours of the pa
numbers of these injurious creatu
he will regale himself frequent
tempting gooseberry or bunch of
is well known; but his servic
him to a very ample reward. T
bird associates with these Thrus
gardens, but makes no compen
our indulgences after his song
he does not find upon the small
Thrush benefits us through the y

propensities for this particular food, and every grove resounds with his harmony in the season; and probably if this race suffered less from the gun of the Christmas pepper, the gardener might find much benefit, in his ensuing crop of fruit, from the forbearance."

The Missel Thrush, or Stormcock, (*Turdus viscivorus*), is the largest of the European Thrushes, being nearly twelve inches in length. Bill dusky; eyes hazel; the head, back, and lesser coverts of the wings olive brown, the latter tipped with dull brownish white; the lower part of the back and rump tinged with yellowish brown and ash; sides of the head and throat yellowish white, spotted with brown; from thence to the vent white, with dusky spots; those of the breast triangular in shape, and of the belly and sides roundish: tail feathers brown, the three outermost tipped with white: legs yellow; claws black. Its food consists principally of berries, those of the misletoe being its favourite; from whence the ancients erroneously believed that the plant could not vegetate without having passed through its body,—hence the proverb, "*Turdus malum sibi cacat.*" It will also eat insects, and their larvæ, with which it feeds its young. It builds its nest in the fork of low trees, particularly those that are covered with moss; coarse grass, woven together with wool, and a lining of fine dry grass, being the materials. The eggs are four or five in number, of a flesh-colour, varied with deep and light rust-coloured spots. This bird is common throughout all Britain, and resident at all seasons. It is very wild and distrustful, except at the season of propagation, when it approaches the vicinity of human habitation, and is remarkable for the spirit with which it attacks and drives away Magpies, &c. from near its nest, uttering a loud harsh shriek. Its song is powerful and monotonous; and if the weather be mild, it will begin to sing at the commencement of the year.

That most entertaining naturalist, Charles Waterton, Esq., whose art of story-telling is only excelled by the soundness of his ornithological observations, concludes his remarks on this bird as follows:—"The Stormcock surpasses all other Thrushes in size, and is decidedly the largest songster of the European birds. He remains with us the whole of the year; and he is one of three birds which charm us with their melody during the dreary months of winter, when the Throstle and the Lark are silent, and all the migratory birds have left us, to sojourn in warmer climates. On this account I prize him doubly. He appears to be gregarious in the months of August and September. I have occasionally counted from forty to fifty of these birds in a flock; and I suspect they are sometimes mistaken for an early arrival of fieldfares, by those who pay attention to the migration of birds. The Stormcock is remarkably fond of the berries of the mountain-ash. He who loves to see this pretty songster near his dwelling would do well to plant a number of *mountain-ashes near his pleasure-grounds: they are of quick growth,* and they soon produce an abundance of berries.

"Whilst the fruit of these trees affords a delicious repast to the Stormcock, the branches that bear the berries are well known to be an effectual preservative against the devilish spells of witchcraft. In the village of Watton I have two small tenants: the name of one is James Simpson, that of the other Sally Holloway; and Sally's house stands a little before the house of Simpson. Some three months ago I overtook Simpson on the turnpike road, and I asked him if his cow were getting better, for his son had told me she had fallen sick. 'She's coming on surprisingly, Sir,' quoth he. 'The last time that the cow-doctor came to see her, 'Jem,' said he to me, looking earnestly at old Sally's house, 'Jem,' said he, 'mind and keep your cow-house door shut before the sun goes down, otherwise I won't answer what may happen to the cow.'—'Ay, ay, my lad,' said I, 'I understand your meaning; but I am up to the old slut, and I defy her to do me any harm now.'—'And what has old Sally been doing to you, James?' said I.—'Why, Sir,' replied he, "we all know too well what she can do. She has long owed me a grudge; and my cow, which was in very good health, fell sick immediately after Sally had been seen to look in at the door of the cow-house, just as night was coming on. The cow grew worse and worse; and so I went and cut a bundle of wiggin (mountain-ash), and I nailed the branches all up and down the cow-house; and, Sir, you may see them there if you will take the trouble to step in. I am a match for old Sally now, and she can't do me any more harm, so long as the wiggin branches hang in the place where I have nailed them. My poor cow will get well in spite of her.' Alas! thought I to myself, as the deluded man was finishing his story, how much there is yet to be done in our part of the country by the schoolmaster of the nineteenth century!"

The Hermit Thrush. (*Turdus solitarius.*) The favourite native haunts of this silent and recluse species, according to Wilson, are the dark solitary cane and myrtle swamps of the southern States of America. It has been supposed, he says, to be only a variety of the Wood-thrush; but it is considerably less, being only about seven inches in length, and altogether destitute of the clear voice and musical powers of that charming minstrel. Its upper parts are a plain, deep olive-brown; lower, dull white; upper part of the breast and throat, dull cream colour, deepest where the plumage falls over the shoulders of the wing, and marked with large dark brown pointed spots; ear, feathers, and line over the eye, cream, the former mottled with olive; edges of the wings lighter, tips dusky, tail-coverts and tail, inclining to a reddish fox-colour. Tail slightly forked; legs dusky; bill black above, and at the tip, whitish below.

The Wood Thrush (Turdus melodus) is about eight inches in length; the whole of the upper parts of the body are fulvous brown,

months of May and June, and is greatly admired; but during the day it is silent: its favourite haunts are thick shaded hollows by the sides of brooks or rivulets: its nest, made of withered beech leaves with layers of dry grass mixed with mud, and lined with dry fibrous roots, is often placed in an alder bush. Its eggs are four or five in number, and of a light blue colour.

The Redwing Thrush, (*Turdus iliacus*), like the Fieldfare, which it much resembles, is migratory, generally arriving in Britain about the latter end of September, and departing gradually, not in flocks, in the spring. It is about eight inches and a half in length: the flanks and beneath the wings are deep ruffous; the back brown, inclining to olive green; a conspicuous pale streak over the eye; and longitudinal markings on the under parts. It is abundant in Norway, Sweden, and Prussia. Its nest is placed in a low bush or shrub; and it lays five or six blue-green eggs, spotted with black. Its song is not very attractive.

In Mr. Hewitson's elegant work on the Eggs of Birds, is the following interesting account of the Redwing: "In our long rambles through the boundless forest scenery of Norway, or during our visits to some of its thousand isles, whether by night or by day, the loud, wild, and most delicious song of the Redwing seldom failed to cheer us. Unlike its neighbour the fieldfare, it was solitary and shy, and on our approach to the tree on the top of which it was perched, would drop down and hide itself in the thick of the brushwood. Throughout that part of the country which we visited, it is known by the name of Nightingale, and well it deserves to be so; to a sweeter songster I have never listened. Like the nightingale of more southern skies, its clear sweet song would occasionally delight us during the hours of night, if the two or three delightful hours of twilight which succeed the long day of a Norwegian summer can be called night. The birds, like the other inhabitants of the

with clay, and
The author
list,' says it is
that the Red
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ing, give the
worms; and
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feed in those
we shall obser
But in the mi
the flocks that
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In this count
the river Seve
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visit the uplan
the hedges, a
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foliage with such magical rapidity, and every succeeding morning opens with such agreeable accessions of feathered songsters to swell the chorus — their plumage as gay and unimpaired as when they enlivened the deep-green forests of tropical climes, that the return of a northern spring excites in the mind a deep feeling of the beauties of the

RED-BREASTED THRUSH.
(TURDUS MIGRATORIUS.)

season, a sense of the bounty and providence of the Supreme Being, which is cheaply purchased by the tedium of nine months of winter. The most verdant lawns and cultivated glades of Europe, the most beautiful productions of art, fail in producing that exhilaration and joyous buoyancy of mind which we have experienced in treading the wilds of Arctic America, when their snowy covering has been just replaced by an infant but vigorous vegetation. It is impossible for the traveller to refrain, at such moments, from joining his aspirations to the song which every creature around is pouring forth to the great Creator."

The Ring Thrush. (*Turdus torquatus.*) This species is migratory, and is found throughout the greatest part of Europe, Asia, and Africa. It is eleven inches in length: the beak is partly orange-yellow: the whole upper part of the plumage is black, with scarcely any gray on the margins of the feathers: the quills and wing-coverts dusky, bordered with pale gray: a gorget of pure white: under wing-coverts pale brown, with broad gray margins: legs dusky brown. It breeds in Wales and many of the mountainous parts of Britain and Ireland; and it is very abundant in the isle of Portland, upon their arrival and departure, every spring and autumn. Its nest is generally placed on the ground, under some small bush: it is formed like that of the Blackbird; and the eggs in size and colour are very like that bird's. During the breeding season it is a rare occurrence to observe a second pair in the same neighbourhood. When they have young, they are very clamorous if disturbed. Their food consists of snails, insects, and berries, particularly those of the juniper.

The Water Thrush. (*Seiurus aquaticus.*) This bird, which is called in America a Thrush, belongs, however, to a different sub-family, but may be described here; it is remarkable for its partiality to brooks, rivers, shores, and ponds; *wading in the shallows in search of aquatic insects*, chattering as it flies. It is only about six inches in length: the whole upper parts are of a uniform and very dark olive, with a line of white extending over the eye, and along the sides of the neck; the lower parts are white, tinged with an ochreous yellow; the breast and sides marked with pointed spots or streaks of black or deep brown: bill brown: legs flesh-colour. Wilson remarks that the cane-brakes, swamps, river shores, and deep watery solitudes of Louisiana, Tennessee, and the Mississippi territory, possess them in abundance; there they are eminently distinguished by the loudness, sweetness, and expressive variety of their notes, which begin very high and clear, falling with an almost imperceptible gradation till they are scarcely articulated. At these times the musician is perched on the middle branches of a tree over the brook or river bank, pouring out its charming melody, that may be distinctly heard for nearly half a mile. The voice of this little bird, says he, appeared so exquisitely sweet and expressive that I was never tired of listening to it, while traversing the deep shaded hollows of those cane-brakes where it usually resorts.

We can afford no more space for the description of other species; but may remark that there are foreign species of this extensive genus intermediate, in every possible way, to all those of Europe. In a group inhabiting Australia, the Indian Archipelago, and slopes of the Asiatic mountains, the dorsal plumage is mottled at all ages; a character peculiar to the nestling dresses of the others. One species belonging to it (*Turdus Whitii*) the largest of all the Thrushes, resembles the Missel Thrush in its form and proportions, and occasionally strays to the west of Europe, having been met with even in Britain. Other Thrushes, peculiar to America, and breeding in the northern division of that continent, are solitary in habit, and successively diminish in size; having the bill weaker and tarsi more elongated, assuming the russet tint of the Nightingale, and gradually losing the breast-spots, &c. In short, the Thrushes form a great centre of radiation, which ramifies in every direction, till the normal generic features disappear.

THYLACINUS. A genus of Marsupial animals. The *Thylacines* are distinguished from the Opossums by the hind feet having no thumb, by a hairy and not prehensile tail, and two incisors less to each jaw. There is only one *existing* species known, a native of Australia. It is smaller than a wolf, and lower on the legs; of a grayish colour, barred with black across its hinder limbs; is very carnivorous, and pursues all small quadrupeds. It is principally nocturnal in its habits; and in its native island (Van Diemen's Land) it is called both *Tiger* and *Hyæna*.

THYMALLUS. [See Grayling.]

THYMELE. A genus of Diurnal Lepidoptera belonging to the family Hesperidæ, or "Skippers" as they are called in this country. Of the British species we may par-

ticularize the THYMELE MALVÆ; or THE GRIZZLED SKIPPER BUTTERFLY. This elegant and variable insect is distinguished by its numerous white or cream-coloured quad-

GRIZZLED SKIPPER BUTTERFLY (THYMELE MALVÆ.)

rangular notched spots on a dusky ground; the posterior wings with the white spots in the centre forming an interrupted band: all the

THYMELE MALVÆ—UNDER SIDE.

wings have a white or cream-coloured fringe barred with black: beneath, the anterior wings are pale greenish-gray, with white spots, as above; the posterior wings are grayish-green

CATERPILLAR AND CHRYSALIS OF THYMELE MALVÆ.

also spotted as above: fringe with black bars narrower than on the upper surface. The Grizzle frequents woods, commons, dry banks, and meadows about the end of May.

THYNNUS. [See TUNNY.]

THYSANOPTERA. The name given to an order of insects of a very minute size, scarcely exceeding a line in length; characterized by long, narrow, membranous wings, neither folded nor reticulated, with long ciliæ, laid horizontally along the back when at rest; mouth with two setiform mandibles; two triangular flat palpigerous maxillæ, and a palpigerous labium; tarsi, with two joints, vesiculose at the tip: pupa active, semi-complete. The order comprises but a single family, *Thripidæ*, the species of which, however, are rather numerous. These insects are found upon various plants, sometimes swarming in immense profusion in various kinds of flowers, especially the large white hedge-convolvulus: they feed upon the juices of plants, and are often extremely injurious, especially in hot-houses, vine-houses, melon and cucumber beds, &c., the leaves upon which they reside being marked all over with small decayed patches. One species (*Thrips cerealium*) infests the wheat, sometimes to a mischievous extent. It takes its station in the furrow of the seed, in the bottom of which it fixes its rostrum, and by depriving the seed of its moisture, causes it to shrink up. One sex of this species is apterous; the larva is yellow and very mobile, and the pupa is whitish, with black eyes, and very sluggish. This species also gnaws the stems above the knots, and causes the abortion of the ear. It is said that in 1805 the wheat crops in England suffered materially from this minute insect.

THYSANOURA. The name given to an order of apterous insects, comprising many species, none of which undergo a metamorphosis. They are furnished with six legs, and have at the sides of the body, or its extremity, peculiar organs of locomotion. The order contains two families. In the first, the LEPISMADÆ, the abdomen is furnished on each side with a row of movable appendages, like false legs; and is terminated by long pointed bristles, of which three are usually most remarkable. In the second family (the PODURIDÆ), the appendages to the sides of the abdomen are wanting; but the extremity of it is prolonged into a forked tail, by which these insects can take very surprising leaps. [See PODURA.]

TICK. The *Ricinus*, commonly known as *Ticks*, belong to the ACARIDÆ [which see].

They are small, disagreeable animals, usually of a flattened, round, or oval form; generally destitute of eyes, but have the mouth provided with lancets, that enable them to penetrate more readily the skins of animals whose blood they suck. They fasten upon horses, cows, sheep, dogs, and other quadrupeds; and they bury their suckers (which are often furnished with minute recurved hooks) so firmly in the skin, that they can scarcely be detached without a portion of it coming away with them. They acquire a very considerable size by suction, being frequently distended like a blown bladder, and full of blood. It is common to find them in thick woods, abounding in brushwood, briers, &c., and attaching themselves to plants with the two anterior legs. [For an account of a curious species of Tick commonly called *Red-Spider*, see SPIDER.]

TIGER. (*Felis tigris.*) This most beautiful, but most destructive of quadrupeds, is undoubtedly, next to the Lion, also the most powerful animal of the feline species. It is a native of the warmer parts of Asia, and is principally found in India and the Indian Islands; though the species extends as far as China, Chinese Tartary, and the Altaic

ins. It has all the zoological cha- prowling habits, and sanguinary ities common to the rest of the genus; distinguished from them all by the markings of its coat. The ground s a bright orange-yellow; the face, and under side of the belly being white; the whole elegantly striped es of transverse black bands or bars, form a bold and striking contrast ground-colour. About the face and e stripes are proportionally smaller other parts; and the markings are d, in an annular form, upon the tip of which is black.

TIGER.—(FELIS TIGRIS.)

Tigers exhibited in our menageries fail to engage the spectator's especial but a wide difference is observable such animals as by long confine- nd an alteration of climate, have lost ive brilliancy of their colours, and hich roam the forest, or lurk in the nd morass. When seen in perfec- d before its health has been impaired nement, it is scarcely possible to a more elegantly variegated ani- e bright and intense orange-yellow; and well-defined stripes of black, parts double, in others single; the ite of the cheeks and lower part of s, over which a part of the black is continued—form, altogether, an nce superior in beauty to that of er regularly marked quadruped. h the Tiger is generally inferior in he Lion, it has sometimes been seen ger, viz. of the length of fifteen feet e nose to the tip of the tail. The re those of India, which are termed igers.

s animal is said to surpass in ferocity her, it is accordingly considered as dreadful scourge of the hotter re- Asia. It has been common to re- it as quite untameable even when in ment; but many instances might be show that such an assertion is with- ndation; though no one can deny is extremely difficult to overcome turally cruel and ferocious nature. er's method of seizing his prey is by ng himself from view, and springing orrible roar on his victim, which he ff, and tears to pieces, after having tly satiated himself by sucking the and such is his strength, that he is arry off a buffalo with seeming ease. rens, like the Lioness, *produces four young at a litter: she is* at all times furious, but when robbed of her young her rage exceeds all bounds. Braving every danger, she then pursues her plunderers, who are often glad to release a cub in order to retard her while they make their escape: she stops, takes it up, and carries it to the nearest cover, but instantly returns, and renews her pursuit, even to the very gates of buildings, or the edge of the sea; and when her hope of recovering them is lost, she expresses her agony by hideous and terrific howlings.

The following observations on the habits, chase, &c. of the Tiger are much to the purpose: "The bound with which the ambushed Tiger throws himself upon his prey is as wonderful in its extent as it is terrible in its effects. Pennant justly observes that the distance which it clears in this deadly leap is scarcely credible. Man is a mere puppet in his gripe; and the Indian buffalo is not only borne down by the ferocious beast, but carried off by his enormous strength. If he fails, it has been said that he makes off. This may be true in certain instances, but in general he does not slink away, but pursues the affrighted prey with a speedy activity which is seldom exerted in vain. This leads us to the observation of Pliny celebrating its swiftness, for which the Roman zoologist has been censured, most unjustly, apparently; nor is he the only author among the ancients who notices its speed. Oppian (*Cyneg.*, i. 323.) speaks of the swift Tigers as being the offspring of the Zephyr. Pliny, says Pennant, has been frequently taken to task by the moderns for calling the Tiger 'animal tremendæ velocitatis;' they allow it great agility in its bounds, but deny it swiftness in pursuit. Two travellers of authority, both eye-witnesses, confirm what Pliny says; the one indeed only mentions in general vast fleetness; the other saw a trial between one and a swift horse, whose rider escaped merely by getting in time amidst a circle of armed men. The chase of this animal was a favourite diversion with the great Cam-Hi, the Chinese monarch, in whose company our countryman, Mr. Bell, that faithful traveller, and the Père Gerbillon, saw these proofs of the Tiger's speed."

Numerous are the instances which might be given of the Tiger's ferocity, and contempt of danger. The following fatal event, as described by an eye-witness, though frequently related, possesses such an unusual degree of fearful interest, that we are tempted to repeat it here. It took place in 1792; the unfortunate victim was the son of Sir Hector Monro, Bart. "We went," says the narrator, "on shore on Sangar Island, to shoot deer, of which we saw innumerable tracks, as well as of Tigers; notwithstanding which, we continued our diversion till near three o'clock, when, sitting down by the side of a jungle to refresh ourselves, a roar like thunder was heard, and an immense Tiger seized on our unfortunate friend, and rushed again into the jungle, dragging him through the thickest bushes and trees, every thing giving way to his monstrous strength: a Tigress accompanied his progress. The united exer-

by us at the time this accident took place; and ten or more of the natives with us. The human mind can scarce form any idea of this scene of horror. We had hardly pushed our boat from that accursed shore, when the Tigress made her appearance, almost raging mad, and remained on the sand all the while we continued in sight."

The following narrative of the almost miraculous escape of an European soldier from the grasp of a Tiger is given by an officer who some years since was in command of a party in India, and may therefore be regarded as authentic:—

"It was after a long day's march of fifteen miles, across a country where with difficulty a road could be traced, and that made by deep ravines cut by the rains, with here and there upright stones, that we arrived at a jungle unusually swampy, which, from its size, and the fatigued state of the soldiers and cattle, I thought it prudent to defer passing until the following morning, when, probably, we should fall in with an enemy about three thousand strong, with several pieces of cannon, under the command of Ally Newas Khan, with whom we were not over anxious to hazard an engagement, from the inferiority of our force; which consisted only of six hundred Europeans and two small field pieces.

"I had observed several flocks of wild peacocks and turkeys while the tents were pitching, which always frequent the same dry heathy ground adjacent to jungles, that tigers do; but from our numbers, the compactness of our encampment, and the precaution I had taken to order fires to be kindled in various directions, I conceived we had little to fear from any visit those gentlemen might think proper to pay us. I had but just entered my tent, and wrapped myself in my boat cloak, with a view to doze away the remaining hour or two, before we broke up for another day's march to join General R——y, when the report of a musket roused me. I instantly started to the entrance of my tent, and was questioning the

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uld appear that the Tiger, either distance of his leap or the hard- e soldier's cartouch box, fortunately hold, and seized him after he had him down, by his clothes, the car- x saving him from being bitten. convinced that never did any man, into consideration the distance he ed before he released himself, and nstance of his being wounded by intended for the tiger, which di- what road to follow, more pro- y escape to all appearance an in- eath."

nexed "Tiger adventure" some e appeared in the *Literary Gazette*, journal it was sent by an Indian dent. As it contains a mixture of ellous with what, at a distance, ore ludicrous than tragical, it may haps, to allay any agitation of the ich the dreadful catastrophe above ay have caused:—

nnual supply of good things having this morning, we were enjoying of some delicious Burgundy and after dinner, when we were roused t screams in the direction of the We were all up in an instant, and en directed to the spot. Our spe- on the cause were soon set at rest pearance of two *hircarras* (messen- a lad with a vessel of milk on his r this daily supply they had gone iles, and had nearly reached the en, having outwalked the boy, e alarmed by his vociferations, e, let go, let go—I am your child, t me go!' They thought the boy , it being very dark, cursed his d desired him to make haste; but wild exclamations continuing, they and found a huge tiger hanging on d cold-weather doublet. The *hir-* tacked the beast most manfully javelin-headed sticks, and adding ams to his, soon brought the whole en, women, and children, armed orts of missiles, to the rescue; and eir discordant yells that made us our good fare for the jungles of The 'lord of the black rock,' for e designation of the Tiger, was one t ancient *bourgeois* of Morwun: his is Kálá-pahár, between this and r, and his reign for a long series of been unmolested, notwithstanding ous acts of aggression on his bovine indeed, only two nights before, he bed gorging on a buffalo belonging oilman of Morwun. Whether this an incarnation of one of the Mori Morwun, tradition does not say; er gun, bow, nor spear, had ever d against him. In return for this ce, it is said, he never preyed upon f he seized one, would, upon being with the endearing epithet of r uncle, let go his hold; and this for the little ragged urchin using which almost prevented the *hir-* urning to his rescue."

e *grand and exciting field-sports* of the East, there is none, it is said, that equals a Tiger-hunt; but the length to which this article has already extended forbids our indulging in the description of any. When it is remembered, however, that from ten to thirty well-trained elephants, each carrying sportsmen armed with rifles, not unfrequently join in the chase, it will readily be conceived how great must be both the excitement and the danger.

Tigers' skins are occasionally imported into Europe, as objects of curiosity rather than of use, except as hammer-cloths for carriages. In China they are used by the mandarins as covers for their seats of justice, as well as for cushions, pillows, &c., in the winter: the more intense the yellow, and the better defined the stripes, the more valuable are the skins.

TIGER BEETLES. [See CICINDELIDÆ.]

TIGER [MOTHS]. A name given by collectors to different species of Moths, of the genera *Arctia*, *Hypercampa*, and *Nemeophila*.

TIGRISOMA. A sub-genus of Bitterns found in South America, and so called from the markings on their bodies somewhat resembling those of the Tiger.

TIMALIA. A genus of birds found in the groves and small woods which abound throughout Java. The species (*T. pileata*) described by Dr. Horsfield is six inches and a half in length; and having a body rather stout, and ovate. General colour above, brown with an olivaceous tint; underneath, dull testaceous, inclining to gray; crown of the head, chestnut; throat and cheeks white: breast white, inclining to gray, marked with intensely black stripes by the shafts of the plumes. A narrow white band commences at the forehead, near the base of the bill, encircles the eye, and unites with the white plumes of the cheeks. Quills brown, tinged with chestnut on the edges: lesser wing-coverts, as well as the plumes which cover the nape and back, grayish-blue at the base: bill black and shining: feet brown. It constructs its nest in hedges, and is a bird of social habits, delighting to dwell in the neighbourhood of plantations and human dwellings. Its flight is low and interrupted; and it is generally a welcome neighbour wherever it resides, in consequence of the peculiarity and pleasantness of its note, which is remarkably slow and regular.

TIMARCHA. A genus of Coleopterous insects, allied to Chrysomela. The *Timarcha lævigata* is a common British species, between half and three quarters of an inch long. It frequents woods, turf, and low herbage; crawls slowly, and emits a reddish-yellow fluid from the joints when disturbed: from which circumstance it is vulgarly known as the Bloody-nose Beetle. The larvæ bear a strong resemblance to the perfect insect, both in appearance and general habits: when disturbed, they roll themselves up after the manner of a wood-louse.

TINAMOU. (*Tinamus.*) A genus of Gallinaceous birds, consisting of several spe-

and blunt at the end; somewhat vaulted, with a small groove at each side. Their wings are short, and they have scarcely any tail. The membrane between the base of their toes is very short; and their hind claw, reduced to a spur, cannot touch the ground. Their size varies from that of a Pheasant down to that of a Quail.

The Great Tinamou (*Tinamus Brasiliensis*) is eighteen inches long; and the general colour of the plumage grayish-brown, inclining to olive, with a mixture of white underneath and on the sides, and of greenish on the neck: upper part of the back, wing-coverts, and tail, marked with dusky transverse spots: sides of the head, throat, and fore-part of the neck, not well clothed with feathers. The tail is short; the beak black; and the legs yellowish-brown, the hind part of them very rough and scaly. This species inhabits the great forests of Guiana, and roosts upon the lower branches of trees, two or three feet from the ground. The female lays from twelve to fifteen eggs, the size of those of a hen, and of a beautiful green colour, in a nest formed of moss and dried leaves, and placed on the ground, among the thick herbage, near the root of some large tree. The young run after the mother almost as soon as hatched, and hide themselves on the least appearance of danger. Their cry, which is a kind of dull whistle, is heard every evening at sunset, and again at sunrise; and so well do the natives imitate it, that the birds are easily decoyed within reach of the gun: they also take many during the night, while roosting on the trees. Their food consists of various fruits and grain, worms, and insects; and their flesh is highly esteemed.

The Rufescent Tinamou. (*Tinamus rufescens.*) This bird, the most beautiful of the genus, is fifteen inches and a half in length. The top of the head is spotted with black, and bordered with rufous: the shoulders, back, wing-coverts, and rump are gray with a reddish shade, and transversely

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types of the family; such as *Ctenophora*, *Pedicia*, and the true *Tipulæ*, which are vulgarly termed Daddy-long-legs.

The *Tipulidæ Culiciformes* resemble Gnats, having the antennæ entirely pilose, but with the hairs much longer in the males than in the females. Their larvæ live in the water, and resemble those of Gnats. Some of them have false feet; others have arm-like appendages at the posterior extremity of the body; and they are generally of a red colour. The pupæ are also aquatic, and respire by two outer appendages placed at the anterior extremity of the body. Some have the power of swimming.

The *Tipulidæ Tericolæ* comprise the largest species in the family, with the antennæ longer than the head, and slender; destitute of ocelli; the eyes round and entire; the wings, extended in many, have always membranous nerves, united together transversely, and closed discoidal cells. The front of the head is narrowed, and prolonged into a muzzle, with a basal prominence; the palpi generally long, and the extremity of the tibiæ spinose. The larvæ of many species live in the earth, the decayed parts of trees, &c. The thorax is not distinct, and they have no false feet. The pupæ are naked, with two respiratory tubes near the head; and the edges of the abdominal segments spinose.

TITLARK, or TITLING. The English name of birds of the genus *Anthus*. [See LARK.]

TITMOUSE. (*Parus.*) A genus of active little birds, continually flitting from spray to spray, and suspending themselves in all kinds of attitudes. They are noted for the peculiarly elegant construction of their nests, which are composed of the softest materials; and many of them are fastened to the extreme end of a small branch of a tree that projects over the water—a contrivance by which they are well secured from the attacks of quadrupeds and reptiles. They are extremely prolific, and provide for their numerous young ones with the most indefatigable industry. Such is their strength and courage that they will venture to attack birds above three times their own size; and when they kill an opponent (or even if they find one that has recently died) they always pierce a hole in the skull and eat the brains. Their principal food consists of insects, which they obtain in the spring by biting off the opening buds, and in the summer by searching in cracks and crevices of trees. The Titmice have short conical bills, with the tips not dentated, and a few bristles at the base. Though essentially insectivorous, many of them also feed on fruit and seeds of various kinds, and show great fondness for animal fat. A writer in the Quarterly Review (Dec. 1842) tells us that "Tom-tits are called '*Bee-biters*' in Hampshire. They are said to tap at the hives of the bees, and then snap up the testy inmates, who come out to see what it is all about: if birds chuckle as well as chirp, we can fancy the delight of this little *mischievous ne'er-do-good* at the *success of his lark*." *Our figure represents* a characteristic species of the group, the COLE TITMOUSE. (*Parus ater.*) This species is not so common in England as it appears

COLE TITMOUSE.—(PARUS ATER.)

to be in Scotland, where it abounds in the woods. The head, neck, and upper part of the breast black; the cheeks and nape white. This species makes its nest in holes of old trees near the ground, forming it of moss lined with hair; its eggs are from six to eight, white with reddish spots.

The BLACK-CAPPED TITMOUSE (*Parus atricapillus*), which Wilson, the American ornithologist, suspects to be identical with the *Parus Hudsonicus* of Latham, is thus described by him:—"This is one of our resident birds, active, noisy, and restless; hardy beyond any of his size, braving the severest cold of our continent as far north as the country round Hudson's Bay, and always appearing most lively in the coldest weather. The males have a variety of very sprightly notes, which cannot, indeed, be called a song, but rather a lively, frequently repeated, and often varied twitter. They are most usually seen during the fall and winter, when they leave the depths of the woods, and approach nearer to the scenes of cultivation. At such seasons they abound among evergreens, feeding on the seeds of the pine tree; they are also fond of sunflower seeds, and associate in parties of six, eight, or more, attended by the Carolina Nuthatch, the Crested Titmouse, Brown Creeper, and small Spotted Woodpecker; the whole forming a very nimble and restless company, whose food, manners, and dispositions are very much alike. About the middle of April they begin to build, choosing the deserted hole of a squirrel or woodpecker, and sometimes, with incredible labour, digging one out for themselves. The female lays six white eggs, marked with minute specks of red; the first brood appear about the beginning of June, and the second towards the end of July; the whole of the family continue to associate together during winter. They traverse the woods in regular progression, from tree to tree, tumbling, chattering, and hanging from the extremities of the branches, examining about the roots of the leaves, buds, and crevices of the bark, for insects and their larvæ. They also frequently visit the orchards, particularly in the fall of the year, the sides of the barn and barn-yard, in the same pursuit, trees in such situations being generally much infested with insects. We, therefore, with pleasure,

rank this little bird among the farmer's friends, and trust our rural citizens will always recognize him as such. This species has a very extensive range; it has been found on the western coast of America as far north as lat. 62°; it is common at Hudson's Bay, and most plentiful there during winter, as it then approaches the settlements in quest of food. Protected by a remarkably thick covering of long, soft, downy plumage, it braves the severest cold of those northern regions.—The Black capped Titmouse is five inches and a half in length; the throat, and whole upper part of the head and ridge of the neck, black; between these lies a triangular edge of white, ending at the nostril; bill, black and short; tongue truncate; rest of the upper parts, lead coloured or cinereous, slightly tinged with brown; wings edged with white; breast, belly, and vent, yellowish white; legs light blue; eyes dark hazel. The male and female are nearly alike.

The Blue Titmouse. (*Parus cœruleus.*) The length of this elegant little bird is four inches and a half; its beak is dusky; forehead and cheeks white, that on the forehead forming a line round the crown of the head, which is of a clear blue; behind this there is a circle of blue, surrounding the head, and joining at the base of the under mandible, where it is nearly black: from the beak, through the eyes, is a narrow black line. The back is yellowish-green: quills black, with bluish edges; wing-coverts blue, edged with white; under parts of the body yellow: tail blue, the two middle feathers longest. The female is rather smaller than the male, has less blue on the head, and the colours in general are not so bright. This bird is an inhabitant of Europe, and in no country more common than in our own. It has long had the unenviable reputation of being very destructive to gardens and orchards, by plucking off the buds in search of insects and their larvæ that are lodged within; but whether as their destroyer it does more good, than as the horticultural depredator it does harm, is a question not thoroughly ascertained. It is fond of flesh of any description, either fresh or putrid; and it displays its pugnacious and predaceous disposition whenever it has a fair chance of coming off conqueror. The nest is made in the hollows of trees, of moss lined with feathers and hair. The female lays seven or eight eggs, white, speckled with rust colour: she is very tenacious of her nest, and will suffer herself to be taken rather than quit it; nay, upon that occasion she will erect all her feathers, utter a noise like the spitting of a cat, and if handled, will bite very sharply. The note of this bird consists only of a disagreeable shriek.

Another of the *Parus* tribe is thus pleasingly described by the author of the 'Journal of a Naturalist.' "Our tall hedgerows and copses are frequented by a very amusing little bird, the Long-tailed Titmouse (*Parus caudatus*). Our boys call it the Long-tailed Tom-tit, Long Tom, Poke-pudding, and various other names. It seems

the most restless of little creatur
day long in a state of progressio
to tree, from hedge to hedge, jerk
the air with its long tail like a
thers, or threading the branche
several following each other in a l
the leading bird uttering a shrill
twit, twit, and away they all s
first, stop for a second, and the
again, observing the same order
tation the whole day long. Th
velled by these diminutive crea
course of their progresses from th
till the evening roost must be co
yet, by their constant alacrity and
they appear fully equal to their
We have no bird more remark
family association than this P
never seen alone, the young ones
to accompany each other from t
their hatching until their pairin
Its food is entirely insects, wh
among mosses and lichens, the v
being captured by the diminutiv
creature. Its nest is as singular
tion as the bird itself. Even in
passed away, when, a nesting b
my plunder on the benty grass
admiration; and I never see it
secretly lauding the industry of
architects. It is shaped like a b
ternally fabricated of moss a
herbaceous lichens, collected chi
sloe and the maple; but the inci
such a profusion of feathers, th
rather filled than lined with them
feather-bed! I remember findi
or sixteen pea-like eggs within
covert, and many more were rep
been found. The excessive la
parent birds in the construction a
of this mass of materials is excess
that I know of; and the exert
little creatures in providing for,
with all the incumbrances of f
tails, fourteen young ones, in su
tion, surpass in diligence and in
efforts of any other birds, persev
are, that I am acquainted with
naturalists place it in a separate
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Mecistura.

Pendulous Titmouse. (*Ægith*
lious.) This species derives its na
pensile purse-like or flask-like ne
suspended at the end of some wil
other flexible branch of a tree tha
the water. This skilfully wrought
is woven from the cotton-like wo
of the willow or poplar, with an
the side for the ingress and the eg
artificers and their young; and it
so placed as to droop over the
rivulet or pond. This bird is fou
length: the bill is black, stra
little pointed; forehead, top of
and nape, pure ash-colour; fea
the eyes and ears deep black; ba
pulars reddish gray; throat
lower parts generally whitish
tints; coverts of the wings dendr
with light rusty and white; wa

blackish, bordered with whitish rusty; tail feathers tipt with white. The female is rather less than the male; the black on the forehead not so large nor so deep; and the

PENDULOUS TITMOUSE.
(ÆGITHALUS PENDULINUS.)

upper parts more clouded with rust-colour. They are found in Russia, Poland, along the banks of the Danube, where it breeds, and in the south of France and Italy. It frequents the reedy banks of rivers and lakes; and its food consists of the seeds of the reeds, and of molluscs and aquatic insects.

TOAD. A tailless Batrachian Reptile belonging to the genus *Bufo*; of which there are several species. They are characterized by a thick and squat body, much swollen, and covered with warts or tubercles; the head large, flat on the top, with a protuberance studded with pores behind each eye, from which a fetid milky secretion is expressed; no teeth in either jaw, the hind limbs but little elongated; and the toes very slightly webbed. The COMMON TOAD (*Bufo vulgaris*) is found in gardens, woods, and fields, and frequently makes its way into cellars, or any obscure recesses where it may find a supply of food and security from too great a degree of cold. Early in spring, it retires to the

TOAD.—(BUFO VULGARIS.)

waters, where it continues during the breeding season, and deposits its ova or spawn in the form of double necklace-like chains or strings of beautifully transparent gluten, of the length of three or four feet, the ova throughout the whole length having the appearance of so many small jet-black globules or beads: these are in reality no other than the tadpoles or larvæ convoluted into a globular form, and waiting for the period of their evolution or hatching, which takes place in the space of about fourteen or fifteen days, when they break from the surrounding gluten, and, like the tadpoles of Frogs, swim about in the water, imbibing nourishment from various animalcules, &c., till their legs are formed, the tail gradually becomes obliterated, and the animals quit the water for the surface of the ground, which generally happens early in the autumn. The prevailing colour of the Common Toad is an obscure brown above, much paler and irregularly spotted beneath. It is, however, occasionally found of an olive cast, with darker variegations; and sometimes, particularly in the earlier part of summer, the limbs are marked with reddish spots; while a tinge of yellow often pervades the under parts both of the limbs and body. Much has been said by the older writers with respect to the Toads's supposed venom, but it appears to be perfectly free from any poisonous properties. It is true that dogs, on seizing a Toad, and carrying it for some little time in their mouth, will appear to be affected with a very slight swelling of the lips, accompanied by an increased discharge of saliva—the mere effect of the slightly acrimonious fluid which the Toad on irritation exudes from its skin, and which seems, in this country at least, to produce no dangerous symptoms in such animals as happen to taste or swallow it. The limpid fluid also, which this reptile suddenly discharges when disturbed, is a mere watery liquor, perfectly free from any acrimonious or noxious qualities. Its usual pace is a kind of crawl; and on being alarmed or threatened with danger, it stops, swells its body, and, on its being handled, a portion of the cutaneous secretion, just mentioned, exudes from the follicles.

It is well known that the Toad, like many other Amphibia, can support a long abstinence, and requires but a small quantity of air: but in the accounts generally given of Toads discovered in stones, wood, &c., the animals are said to have been completely impacted or imbedded, and without any space for air. In confirmation of this doctrine, Mr. Jesse relates "the following fact. A gentleman put a Toad into a small flower-pot, and secured it so that no insect could penetrate into it, and then buried it in the ground at a sufficient depth to protect it from the influence of frost. At the end of twenty years he took it up, and found the Toad increased in size, and apparently healthy." He then informs his readers that "Dr. Townson, in his tracts on the respiration of the Amphibia, proves from actual experiment, that, while those animals with whose economy we are best acquainted receive their principal supply of liquids by the mouth, the frog and salamander tribes take in theirs through the skin alone; all the aqueous particles being absorbed by the skin, and all they reject being transpired through it. He found that a frog, when placed on blotting-paper well soaked with water, absorbed nearly its own weight of the fluid in the short time of an hour and a half; and

Toads being found alive in the centre of trees is fully accounted for."

We are quite ready to admit that many very extraordinary cases of this animal having lived for years embedded in stone, wood, or otherwise in a state of total exclusion from the air, and also without the means of obtaining a particle of food during the whole time, are to be met with, supported by most respectable authority; and yet on this oft-discussed question we still confess to a degree of scepticism, the grounds of which we cannot better explain than Dr. Shaw has already done for us: We suspect "that proper attention, in such cases, was not paid to the real situation of the animal. That a Toad may have occasionally '*latibulized*' in some part of a tree, and have been in some degree overtaken or enclosed by the growth of the wood, so as to be obliged to continue in that situation, without being able to effect its escape, may perhaps be granted: but it would probably continue to live so long only as there remained a passage for air, and for the ingress of insects, &c., on which it might occasionally feed; but that it should be completely blocked up in any kind of stone or marble, without either food or air, appears entirely incredible, and the general run of such accounts must be received with a great many grains of allowance for the natural love of the marvellous, the surprise excited by the sudden appearance of the animal in an unsuspected place, and the consequent neglect of minute attention at the moment, to the surrounding parts of the spot where it was discovered." Well, indeed, may Mr. Bell exclaim, "To believe that a Toad enclosed within a mass of clay, or other similar substance, shall exist wholly without air or food, for hundreds of years, and at length be liberated alive, and capable of crawling, on the breaking up of the matrix, now become a solid rock, is certainly a demand upon our credulity which few would be ready to answer!"

"Like the other Amphibia, and the Reptilia generally," observes this gentleman,

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, and has a gape extending as far back he eyes. They are birds of gaudy plu- ge and rapid flight; and they feed on ects, worms, small reptiles, &c. The most gant species is the ROYAL or KING TODY ychorhynchus or *Todus regius*), described Buffon, who considered it as belonging he *Muscicapidæ* or Flycatchers. Its bill omewhat disproportionably broad, very ch flattened, and beset with numerous ng bristles at the base: the colour of the mage on the upper parts is a deep yel- ish brown or chestnut, passing round the part of the neck like a collar: the throat, all the under parts, are whitish yellow, breast being crossed by numerous dusky lulations: the tail is bright ferruginous; l on the head is a most beautiful, broad, nsverse crest, consisting of very numerous thers, disposed in several series, lengthen- as they recede from the front or base. ese feathers are of a bright or red-ferrugi- s colour, and are each terminated by a ck tip, so that the crest resembles that of Hoopoe, placed in a transverse direction. r each eye is a narrow white streak; the l is dark brown; and the legs flesh-colour. is curious bird is a native of Cayenne l Brazil.

GREEN TODY. (*Todus viridis.*) This ele- t little bird is about the size of a Wren, l has a bill long, like that of a Kingfisher, l ridged along the top of the upper man- le, which is of a dusky brown, the lower ng of an orange or yellow colour; at the e of the bill are several stiff black hairs bristles, standing forwards. The whole per side of the bird is of a fine vivid green; inner coverts of the wings are white; the ide of the quills and the under side of the are of a brownish-ash colour; and a of the prime quills are black at their s: the throat is of a very fine red; the ast, belly, thighs, and covert feathers ter the tail are white, a little shaded with e green: the legs and feet are dusky; l the toes are united, as in the King- er.

Mr. Gosse tells us, that in all parts of naica which he visited, the Tody is a y common bird. On the summit of Blue- ds mountain, about three thousand feet m the level of the sea, and particularly ere the deserted provision-grounds are rgrown with thicket, almost impene- ble, of jointer, or joint-wood (*Piper geni- atum*), it is especially abundant. Always spicuous from its bright grass-green coat l crimson velvet gorget, it is still a very ne bird; yet this seems rather the tame- s of indifference than of confidence; it l allow a person to approach very near, d, if disturbed, alight on another twig a yards distant. It hops about the twigs low trees, searching for minute insects, asionally uttering a querulous, sibilant e: but more commonly it is seen sitting lently on a twig, with the head drawn the beak pointing upwards, the loose mage puffed out, when it appears much ger than it is. *It certainly has an air of pidity when thus seen.* But this ab- straction is more apparent than real; if we watch it, we shall see that the odd-looking gray eyes are glancing hither and thither, and that, ever and anon, the bird sallies out upon a short feeble flight, snaps at something in the air, and returns to his twig to swallow it. The following details are so pleasingly characteristic of the bird's habits, that we cannot refrain from making the extract: "One captured with a net in April, on being turned into a room, began immediately to catch flies, and other minute insects that flitted about, particularly little destructive *Tineadæ* that infested my dried birds. At this employment he continued incessantly, and most successfully, all that evening, and all the next day from earliest dawn till dusk. He would sit on the edge of the tables, on the lines, on shelves, or on the floor, ever glancing about, now and then flitting up into the air, when the snap of his beak announced a capture, and he returned to some station to eat it. He would peep into the lowest and darkest corners, even under the tables, for the little globose, long-legged spiders, which he would drag from their webs, and swallow. He sought also about the ceiling and walls, and found very many. I have said that he continued all day at this employment without intermission, and though I took no account, I judged that, on an average, he made a capture per minute. We may thus form some idea of the immense number of insects destroyed by these and similar birds; bearing in mind that this was in a room, where the human eye scarcely recognized a dozen insects altogether; and that in the free air insects would be much more numerous. Water in a basin was in the room, but I did not see him drink, though occasionally he perched on the brim; and when I inserted his beak into the water, he would not drink. Though so actively engaged in his own occupation, he cared nothing for the presence of man; he sometimes alighted voluntarily on our heads, shoulders, or fingers; and when sitting, would permit me at any time to put my hand over him and take him up; though when in the hand he would struggle to get out. He seemed likely to thrive, but incautiously settling in front of a dove cage, a surly Baldpate poked his head through the wires, and with his beak aimed a cruel blow at the pretty green head of the unoffending and unsuspecting Tody. He appeared not to mind it at first, but did not again fly; and about an hour afterward, on my taking him into my hand, and throwing him up, he could only flutter to the ground, and on laying him on the table, he stretched out his little feet, shivered, and died."

The Green Tody is exclusively an insect feeder, and burrows in the earth to breed. The banks of ravines, and the scarps of dry ditches, are excavated by its feeble feet, in which two out of three of its front toes are united together, having only the terminal joint free, and hence the feet of this kind of birds are called syndactylous. The hole runs into the banks some eight inches or a foot; at the extremity of this subterranean lodging

it nestles in secrecy and security. The excavation is made by means of the beak and claws. It is a winding gallery, rounded at the bottom, and terminating in a sufficiently wide lodging, lined with pliant fibres, and dry moss and cotton. Four or five gray, brown-spotted eggs are laid, and the young are fed within the cave till they are full-fledged.

GREEN TODY.—(TODUS VIRIDIS.)

Mr. Gosse remarks that the inhabitants of Jamaica are not in the habit of domesticating many of the native birds; else this is one of the species which would become a favourite pet. In a state of liberty, however, it attracts the admiration even of the most unobservant, and an European is charmed with it. As it sits on a twig in the verdure of spring, its grass-green coat is sometimes undistinguishable from the leaves in which it is embowered, itself looking like a leaf, but a little change of position bringing its throat into the sun's rays, the light suddenly gleams as from a glowing coal. Occasionally, too, this crimson plumage is puffed out into a globose form, when its appearance is particularly beautiful.

TORNATELLA. A genus of Mollusca found on the shores of the Indian Ocean and Senegal; and one species (*Tornatella fasciata*) inhabits our own coasts. The shell is oval, spirally grooved; spire short, consisting of few whorls, and usually striped transversely; aperture long, narrow, rounded anteriorly; outer lip simple, inner lip slightly spread; columella spiral; no epidermis. Several fossil species occur in the London clay and inferior oolite.

TORPEDO. A genus of fishes belonging to the *Raiidæ* family; distinguished for their powers of imparting electric shocks to whatever animals they may come in contact with.

The Torpedo (*Torpedo Vulgaris*), called also the Cramp-fish and the Electric Ray, is thus described by Pennant:—head and body indistinct, and nearly round; greatest breadth two-thirds of the entire length; thickness in the middle about one-sixth of the breadth, attenuating to extreme thinness on the edges; mouth small; teeth minute, spicular; eyes small, placed near each other; behind each a round spiracle, with six small cutaneous appendages on their inner circumference; branchial openings five in number; skin everywhere smooth; two dorsal fins on the trunk of the tail; tail one-third of the entire length, tolerably thick and round; the caudal fin broad and abrupt; ventrals below the body, forming on each side a quarter of a circle; colours, cinereous-brown above, whitish beneath. Mr. Yarrell (who calls this the Old British Torpedo) says, "The electrical powers of the Torpedo are so well understood by the different names that have been applied to it, as well as by the various and voluminous accounts that have been published, that it is unnecessary to repeat what has already appeared so often in print elsewhere. The situation of the apparatus or structure from which these species derive their extraordinary power is indicated by the two elevations, one of which is placed on each outside of the eyes and temporal orifices, and extending to the lateral external rounded edges. The apparatus occupies the whole of the space between the upper and under surface of the body, and is composed, as shown by the figures of Walsh and Pennant, of a great number of tubes arranged perpendicular to the plane of the upper and under surfaces, which, when exposed by a transverse section, have very much the appearance of a portion of honeycomb. The tubes contain a mucous secretion, and the structure is largely provided with nerves derived from the eighth pair. It is said that when the shock is given, the convex part of the upper surface is gradually depressed, the sensation is then felt, and the convexity suddenly returns. The whole use of the electrical apparatus and power to the fish can only be conjectured. That it serves as a means of defence is very probable; that it also enables a slow, inactive fish to arrest and obtain as food some of the more active inhabitants of the deep, is also probable."

At the meeting of the British Association, held at Oxford in June, 1847, Sir H. H. Inglis, the president, in referring to the experiments of the Tuscan philosopher, Matteucci, on the existence of electrical currents in all living animals, made this important observation:—"The delicate experiments of Matteucci on the *Torpedo* agree with those made by our own Faraday upon the *Gymnotus electricus*, in proving that the shocks communicated by those fishes are due to electric currents generated by peculiar electric organs, which owe their most immediate and powerful stimulus to the action of the nerves. In both species of fishes the electricity generated by the action of their peculiar organized batteries—besides its benumbing and stunning effects on living animals, renders the needle magnetic, decomposes chemical compounds, emits the spark, and, in short, exercises all the other known powers of the ordinary electricity developed in inorganic matter, or by the artificial apparatus of the laboratory."

The electric powers of the Torpedo, it is said, by no means affect its flesh; for it is frequently eaten in the south of Europe. It is a native of the Mediterranean and many other seas, and sometimes, though rarely, found on the British coasts. [See GYMNOTUS.]

TORSK. The name of a Sea fish (*Brosme vulgaris*) closely allied to the Cod, and found abundantly on the Shetland Islands, where it is much prized.

TORTOISES. (*Testudinata.*) Under this general appellation is included a numerous and interesting order of Reptiles, which are distinguished, at the first glance, by their body being inclosed in a double buckler, which only allows the head and neck, the tail, and the four limbs to be protruded. They are slow, quiet, and inoffensive animals; extremely tenacious of life; suffering the severest mutilations for days or even weeks; and for longevity they are unequalled, actual proof having been given of some which were known to have lived upwards of two hundred years. Their motions are usually slow and awkward, and their sensations appear to be very obtuse. They feed upon vegetable substances, and seldom wander far from their usual haunts; but they require very little nourishment, and can even remain for months without taking any. For the most part they inhabit the warmer regions of the globe; though many species will bear removal to colder climates, where, however, they pass the winter in a torpid state. The upper buckler, termed the *carapace* or shield, is highly arched and very strong in the Land Tortoises; but more flattened in the aquatic families, for the better adaptation of their form to motion in a liquid. The inferior buckler, named the *plastron* or breast-plate, differs considerably in degree of development, and in the relative consolidation of its different parts. It is most complete in the Land Tortoises; in many of

TORTOISE.—(TESTUDO RADIATA.)

which the anterior and posterior portions of it are so jointed to the centre-piece, as to be able to close the orifices before and behind, after the head, tail, and legs have been drawn in. Notwithstanding this unusual arrangement of the osseous frame-work of the Tortoise tribe, we find the same *constituent parts* (though greatly modified) as in ordinary vertebrata. We see that the carapace on its upper surface is formed by a great number of bony plates, united together by sutures; of these plates, eight occupy the median line, sixteen constitute a longitudinal range on each side of these, and twenty-five or twenty-six surround the whole like an oval frame. But if we examine the carapace by its lower surface, we find that the central pieces are appendages to the dorsal vertebræ. On the under side, the body of each of these bones is found, in fact, to present its ordinary form; as is also the vertebral canal, which serves to lodge the spinal cord; but the upper portion of the walls of the ring which constitute this canal is here spread out sideways as a disc, and is continuous without interruption *with the corresponding plates, belonging to the vertebra which precedes,* and to that which follows. These dorsal vertebræ, thus become immovable, have attached to each a pair of ribs, as in most vertebrated animals: but these ribs are so much widened as to touch each other along the whole or nearly the whole of their length, and are connected together by sutures. Lastly, the marginal pieces, which are articulated with the extremities of the ribs, and which form a kind of border to the carapace, represent the sternal portions of these bones; which in Mammalia remain in a cartilaginous state, as, in fact, they do, in some Tortoises.

COMMON OR GREEK TORTOISE. (*Testudo Græca.*) This well-known species is supposed to be a native of almost all the countries bordering on the Mediterranean sea, and is thought to be more frequent in Greece than elsewhere. It is found in the scattered islands of the Archipelago, and in Corsica and Sardinia; occurring likewise in many parts of Africa. The general length of the shell of this species is from six to eight inches; rarely exceeding the latter measure; and the weight of the full-grown animal is about forty-eight ounces. The shell is of an oval form, extremely convex on the upper part, and composed of thirteen middle pieces, and about twenty-five marginal ones: the middle pieces, or those constituting the disc of the shield, are mostly of an oblong square form, and of a blackish or dark brown colour, varied by a broad yellow or citron band running along one side of each, and continued about half way along the upper part: there is also an oblong patch of a similar colour running down the lower part or side of each: and on the top or centre of each piece is an obscurely square or oblong space; rather more depressed than the rest, and marked, as in many other tortoise-shells, with roughish spots or granules: several furrows more or less distinct in different individuals, appear traced round the sides of each piece, becoming gradually less distinct as they approach the upper part or space just mentioned. The colours of the shell are more or less bright in the different specimens, and are subject to some occasional variations, as well as sometimes in the shape of the pieces themselves. The under part of the shell is of a citron or pale yellow colour, with a broad blackish or deep brown zone down on each side, leaving the middle part plain. The head is rather small; the eye small and black; the mouth not extending beyond the eyes; the upper part of the head covered with somewhat irregular, tough scales, and the neck with smaller granulations so as to be flexible at the pleasure of the animal. The legs are short, and the feet moderately broad, covered with strong ovate scales, and commonly furnished with four tolerably stout claws on each; but these parts are found to vary in number, there being sometimes five claws instead of four on the fore feet. The tail is still shorter than the legs, is covered with small scales, and terminates in a naked horny pointed tip or process. This animal lives to a most extraordinary age, of which fact several well-

SANDPIPER, which sometimes visits us in winter: *Totanus solitarius*, the RESIDENT, which is resident in this country: and *Totanus fuscus*, the SPOTTED SNIPE of Montagu, which is found on our coasts during winter.

One of the most singular species, which is described by Wilson as a native of America, is his *Scolopax melipiva*, but it belongs properly to the genus Totanus, and is the *Totanus melanoleucus* of modern authors. He tells us that this species and the *Totanus flavipes* are "both well known to our duck-gunners along the sea coast and marshes, by whom they are detested, and stigmatized with the names of the greater and lesser tell-tale, for their faithful vigilance in alarming the flocks with their loud and shrill whistle, on the first glimpse of the gunner's approach. Of the two, the present species is by far the most watchful; and its whistle, which consists of four notes rapidly repeated, is so loud, shrill, and alarming, as instantly to arouse every duck within its hearing, and thus disappoints the eager expectations of the marksman. Yet the cunning and experience of the latter are frequently more than a match for all of them; and before the poor tell-tale is aware, his warning voice is hushed for ever, and his dead body mingled with those of his associates.

"The tell-tale seldom flies in large flocks, at least during summer. It delights in watery bogs, and the muddy margins of creeks and inlets; is either seen searching about for food, or standing in a watchful posture, alternately raising and lowering the head, and, on the least appearance of danger, utters its shrill whistle, and mounts on wing; generally accompanied by all the feathered tribes that are near. It occasionally penetrates inland along the muddy shores of our large rivers, seldom higher than tide water, and then singly and solitarily. They sometimes rise to a great height in the air, and can be distinctly heard when beyond the reach of the eye. In the fall, when they are fat, their flesh is highly esteemed, and many of them are brought to our

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CAN.—(RAMPHASTOS.)

usually acts the part of a sen-
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ad been told that these birds
abit of tossing up their food to
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s far as we could observe, they
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es tamed Toucans, and they
en to toss their food, although
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e bill and the stiffness of the
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All the time while feeding, a
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ir appetites, they fly towards
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In the very early morning a
ay be seen sitting silently upon
of some dead tree, apparently
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feeding-trees. Toucans, when
exceedingly familiar, playful
of learning as many feats as
parrots, with the exception of
es turning about on their perch,
eir object by one sudden jump.
thing, but are particularly fond
hen roosting they have a habit
their tails over their backs.
f the red-billed Toucans are
l with red, yellow, and black;
l specimens soon lose their

RED TOUCAN. (*Ramphastos*
Total length eighteen inches;
ven: upper mandible whitish;
general colour of the plumage
e back of the neck crossed by
or bar: fore part of the neck
ed with red, and streaked with
reen: vent feathers red; thighs
egs greenish. This bird is a
parts of Mexico which border
d is supposed to feed on fish.

Illiger separated from *Ramphastos*, under the name of *Pteroglossus*, those species which have the beak not so thick as the head, and are of inferior size, the tail being graduated.

TOURACO. (*Corythaix.*) A genus of birds allied to the *Scansores*. They are natives of Africa. Their generic character may be thus stated:—Bill short, rather small, high, and greatly compressed: the frontal feathers lying upon and concealing the nostrils: culmen high, curved to the tip: lower mandible narrow, both mandibles being distinctly notched at the tip and finely serrated: wings short, and rounded: tail long, broad, and rounded: feet short and strong: claws short, thick, and much com-

TOURACO.—(CORYTHAIX PERSA.)

pressed. The prevailing colour of these elegant birds is green, varied in some species with purple on the wings and tail. They are natives of Africa, where they perch on the highest branches of the forest trees; and feed principally on soft fruits. The most delicate species is thought to be *Corythaix erythrolophus* of Swainson: its crest is red, erect, and compressed; sides of the head, ears and chin, and patch round the eye (which is large, red, and brilliant) white; general plumage green, inclining to bluish on the body and belly; quills rich purple violet; tail rounded; bill yellow; feet grayish black. When the bird is excited or in action, the crest is elevated in a compressed subconical shape; and when thus erected it gives the head a helmeted air.

TOXODON. The name given to an extinct genus of gigantic mammiferous animals, discovered by Mr. Darwin during his sojourn in Banda Oriental, and thus named by Professor Owen, whose notice of this interesting discovery appears in the 'Proceedings of the Geological Society of London,' in 1837. The following clear and concise account, which we extract from Mr. Darwin's Journal, will give the reader a good idea of this wonderful genus of extinct animals. "Having heard of some giant's bones at a neighbouring farm-house on the Sarandis, a small stream entering the Rio Negro, I

But from that order it deviates in the relative position of its supernumerary incisors, in the number and direction of the curvature of its molars, and in some other respects. It again deviates, in several parts of its structure which Mr. Owen enumerated, both from the *Rodentia* and the existing *Pachydermata*, and it manifests an affinity to the *Dinotherium* and the *Cetaceous* order. Mr. Owen, however, observed, that 'the development of the nasal cavity and the presence of frontal sinuses, renders it extremely improbable that the habits of the Toxodon were so exclusively aquatic as would result from the total absence of hinder extremities; and concludes, therefore, that it was a quadruped, and not a Cetacean; and that it manifested an additional step in the gradation of mammiferous forms leading from the *Rodentia*, through the *Pachydermata* to the *Cetacea*; a gradation of which the Water-hog of South America (*Hydrochærus capybara*) already indicates the commencement amongst existing *Rodentia*, of which order it is interesting to observe this species is the largest, while at the same time it is peculiar to the continent in which the remains of the gigantic *Toxodon* were discovered.'

"The people at the farm-house told me that the remains were exposed, by a flood having washed down part of a bank of earth. When found, the head was quite perfect; but the boys knocked the teeth out with stones, and then set up the head as a mark to throw at. By a most fortunate chance, I found a perfect tooth, which exactly fits one of the sockets in this skull, embedded by itself on the banks of the Rio Tercero, at the distance of about 180 miles from this place. Near the Toxodon I found the fragments of the head of an animal, rather larger than the horse, which has some points of resemblance with the Toxodon, and others perhaps with the Edentata. The head of this animal, as well as that of the Toxodon, and especially the former, appear so fresh, that it is difficult to believe they have lain buried for ages

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; and proceeds to quote the
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cies (*Mygale Ionica*) is de-
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duced by a gradual lengthening in the direction of the hinge of the respective layers of which the lid is composed. * * * The interior lining of the tube of *M. Ionica* appears, from all the nests which I have seen, to be of a less perfect consistency than that of *M. fodiens*, and divested of that circumference of macerated earth, or exterior wall, of a more solid consistency than the surrounding mass, which in those of the last-mentioned species give strength to the work, and facilitate the separation of the tubes from the mass in which they are imbedded. In attempting such separation, the tubes of the Zante *Mygale* invariably broke asunder, although this effect may be in some measure attributed to the excessive dryness of the earth at the time of excavation. The length of these tubes was about four and five inches."

We now return to Mr. Westwood's observations on the species of Trap-door Spiders, to notice one which he names *Actinopus ædificatorius*. "This Spider is of a pitchy black colour, and (with the exception of the abdomen) very shining and polished; the abdomen (which is considerably larger than the cephalo-thorax and greatly elevated and gibbose) is obscure, very finely sericeous, and of an uniform dull brown black colour: the legs are clothed with hair and fine bristles of various lengths, and the various joints are connected together by a very pale whitish membrane, which gives them the appearance of being annulated; these limbs are nearly of equal size, but variable in thickness; the palpi are also of considerable length, and have all the appearance of a pair of feet, at least in the female, which is the only sex I have seen either of this or the Jamaica species. This species is a native of North Africa, where it was discovered by Mr. Drummond Hay. The nests are about four inches deep, slightly curved within, and three-quarters of an inch in diameter; the valve at the mouth not being circular, but rather of an oval form, one side, where the hinge is placed, being straighter than the other. The valve is formed of a number of layers of coarse silk, in the upper layers of which are imbedded particles of the earth, so as to give the cover the exact appearance of the surrounding soil, the several successive layers causing it, when more closely inspected, to resemble a small flattened oyster-shell. The mouth of the nest is shelved off at the edge, so that the valve, which is also shelved off at the edge, falls into and upon the orifice, and shuts it far more completely than if the edges of the valve had been cut straight. The inner lining of the nest and of the valve is pure white.

TREE-FROG. [See HYLA.]

TREPANG. (*Holothuria edulis.*) A marine Radiated animal, belonging to the genus *Holothuria*; sometimes called the Sea Cucumber, which is said to be so abundant in certain parts of the Australian coasts, that by diving for them, in from three to eight fathoms water, a man will bring up eight or ten at a time. The mode of preserving it is this: the animal is split down

RADCLIFFE.

one side, boiled, and pressed with a weight of stones; then stretched open by slips of bamboo, dried in the sun, and afterwards in smoke, when it is fit to be put away in bags, but requires frequent exposure to the sun. [See HOLOTHURIA.]

TRERON. A genus of Pigeons with thickish bills, to which by some writers the DODO is considered to have been nearly allied.

TRICHECHUS. [See WALRUS.]

TRICHOGLOSSUS. A genus of the Parrot family.

TRICHOGLOSSUS SWAINSONII, or SWAINSON'S LORIKEET. This bird, whose habitat is the south-eastern portion of the Australian continent, is thus described in Mr. Gould's splendid work:—Head, sides of the face and throat blue, with a lighter stripe down the centre of each feather; across the occiput a narrow band of greenish yellow; all the upper surface green, blotched at the base of the neck with scarlet and yellow; wings dark green on their outer webs; their inner webs black, crossed by a broad oblique band of bright yellow; tail green above, passing into blue on the tips of the two central feathers; under surface of the tail greenish yellow; chest crossed by a broad band, the centre of which is rich scarlet, with a few feathers fringed with deep blue, and the sides being rich orange-yellow margined with scarlet; under surface of the shoulder and sides of the chest deep blood-red; abdomen rich deep blue, blotched on each side with scarlet and yellow; under tail-coverts rich yellow, with an oblong patch of green at the extremity of each feather; bill blood-red, with the extreme tip yellow; nostrils and bare space round the eye brownish black; irides reddish orange, with a narrow ring of dark brown near the pupil; feet olive. The flowers of the various species of *Eucalypti* furnish this bird with an abundant supply of food; and as those trees which are covered with newly expanded blossoms afford the greatest quantity of nectarine juice and pollen, to them they chiefly resort for their subsistence. Three or four species, indeed, are often seen on the same tree, and often simultaneously attacking the pendent blossoms of the same branch.

TRICHODON. (*Trichodon Stelleri.*) The only species belonging to the genus *Trichodon* (which stands among the *Thoracic Percideæ* in Cuvier's system) inhabits the most northern part of the Pacific, being found both on the American and Kamtschatdale coasts, and abounding particularly at Unalaschka. It buries itself in the sands at low water, and is dug up by the natives with their hands. "The females deposit their roes in holes in the sand, where the males fecundate them, and it would appear that the parents look after their offspring, as they are often dug up in the same pits with their little ones."

TRICHOPTERA. The name of an order of insects specially founded by Kirby for the case-worm flies; which are characterized by four hairy membranous wings, bearing

considerable resemblance i
to the Lepidoptera; the un
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TRIDACNA, or CLAM
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which are of gigantic size,
or less beautiful, of a delic
tinged with buff. They a
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large anterior hiatus close
for the passage of a large
the animal fixes itself on ma
rocks, and with the most
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ternal; two laminar teeth i
in the other. The shells
Tridacna gigas weigh 500lb
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TRIGLA. A genus of
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GURNARD.—(TRIG

or defended by spines or scal
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Our figure represents one o
genera, the *Gurnards*, so c
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TRIGONIA. A genus o
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rowed, denticulated on the inner margin, rounded anteriorly, truncated posteriorly; hinge with four oblong, compressed, diverging teeth in one valve, receiving between their grooved sides two similar teeth in the other; in each valve two muscular impressions. The inside is of a brilliant pearly texture, tinged with purple or golden brown. The *Trigonia pectinata* was formerly so very rare, that even an old worn-out valve would fetch a high price. The fossil species are numerous, and occur in the upper and lower oolites, the lias, and in the beds of green sand.

TRIGONOCEPHALUS. A genus of poisonous serpents, characterized by having the tail terminated by a horny conical process or *spur*. They are closely allied to the Rattlesnakes.

TRILOBITES. These Crustacea, which, as Cuvier tells us, appear to have been annihilated during the ancient revolutions of our planet, are defined in that most scientific work of Dr. Burmeister's, devoted to their history, were a peculiar family of Crustacea nearly allied to the existing *Phyllopoda*, approaching this family most nearly in the genus *Branchipus*, and forming a link connecting the *Phyllopoda* with the *Pecilopoda*. We need not add that they are only found in a fossil state, and that our figure, which represents the *Asaphus caudatus*, a very typical form of the family, will give a general idea of the appearance of this group of animals.

ASAPHUS CAUDATUS.

Our countryman, Edward Lhwyd, curator of the Ashmolean Museum, Oxford, considerably more than a century ago, was the first author who wrote on them. Dr. Burmeister, whose work was translated and published by the Ray Society in 1846, believes, from a comparison of their structure with recent analogues, that these animals moved only by swimming, and remained close beneath the surface of the water; they swam in an inverted position, the belly upwards, and made use of their power of rolling themselves into a ball as a defence against attacks from above. Their food was the smaller water-animals. Their habitat was not the open sea, but the vicinity of coasts in shallow water, where they lived gregariously in vast numbers. Dr. Burmeister believes that the numbers of species could never have been very great, and thinks that some geologists, by judging of size and such characters, have multiplied the species too much.

TRIMERA. *The first section of the order Homoptera, which corresponds with the* Linnæan genus *Cicada*, and comprises the most numerous portion of the order, consisting of the largest and most beautiful of the species. They are generally saltatorial, but the hind legs are never disproportionably incrassated: they have ordinarily three joints in the tarsi, and very small antennæ: the wings are varied in their consistence in different species, but the upper pair never exhibit two different textures, so remarkable in the Heteroptera.

TRINGA. A genus of Grallatorial birds, having the bill generally not longer than the head, with its tip depressed, and the nasal groove very long. Their toes have no web at the base, and the back toe scarcely reaches the ground. Their legs are shortish, and in general the birds are of small size. In this genus is the Sandpiper (*Tringa canutus*), and the Purple Sandpiper (*Tringa maritimia*.) The Ruffs are closely allied to them. [See RUFF and SANDPIPER.]

TRITON. A genus of Molluscs, found in the Mediterranean, Indian, and South Seas. The animal has two long tentacula furnished with eyes; foot round, and generally short. The shell is oblong, ribbed or tuberculated, with continuous varices placed alternately on each whorl: spire prominent; right lip often wrinkled, and left occasionally thickened, generally denticulated within; epidermis rough; operculum horny. By some uncivilized nations inhabiting the countries near which it abounds, this shell, often from one to two feet long, is used as a military horn; the apex having a hole bored in it, notes can be produced by blowing through the aperture, and thus it becomes a rude instrument of music.

TROCHILIDÆ. A family of extremely diminutive Tenuirostral birds, celebrated alike for the brilliant lustre of their plumage and the rapidity of their flight. They have a long slender beak, and a tongue split, almost to its base, into two filaments, which, being capable of protrusion upon the same principle as that of the Woodpeckers, they are said to employ it in sucking up the nectar of flowers: they, however, also feed on insects. They have very small feet, a great tail, and excessively elongated and narrow wings; balancing themselves in the air by a rapid motion of the latter, now hovering and humming round flowering shrubs and plants, and now darting through the air with almost incredible swiftness. They fight desperately with each other, and defend their nests with courage. Two of the same species can rarely suck flowers from the same bush without a rencontre: this is abundantly confirmed by Mr. Gosse, when describing the species *Trochilus mango*. "In the garden were two trees, of the kind called the Malay apple (*Eugenia Malaccensis*), one of which was but a yard or two from my window. The genial influence of the spring rains had covered them with a profusion of beautiful blossoms, each consisting of a multitude of crimson stamens, with very minute petals, like bunches of crimson tassels; but the leaf-buds were but just beginning to open.

wings, they would twirl together, round and round, until they nearly came to the earth. It was some time before I could see, with any distinctness, what took place in these tussles; their twirlings were so rapid as to baffle all discrimination. At length an encounter took place pretty close to me, and I perceived that the beak of the one grasped the beak of the other, and thus fastened, both whirled round and round in their perpendicular descent, the point of contact being the centre of the gyrations, till, when another second would have brought them both on the ground, they separated, and the one chased the other for about a hundred yards, and then returned in triumph to the tree, where, perched on a lofty twig, he chirped monotonously and pertinaciously for some time;—I could not help thinking, in defiance. In a few minutes, however, the banished one returned, and began chirping no less provokingly, which soon brought on another chase and other tussle. I am persuaded that these were hostile encounters, for one seemed evidently afraid of the other, fleeing when the other pursued, though his indomitable spirit would prompt the chirp of defiance; and, when resting after a battle, I noticed that this one held his beak open as if panting. Sometimes they would suspend hostilities to suck a few blossoms, but mutual proximity was sure to bring them on again, with the same result. In their tortuous and rapid evolutions, the light from their ruby necks would now and then flash in the sun with gem-like radiance; and as they now and then hovered motionless, the broadly-expanded tail, whose outer feathers are crimson-purple, but when intercepting the sun's rays transmit orange-coloured light, added much to their beauty. A little Banana Quit, that was peeping among the blossoms in his own quiet way, seemed now and then to look with surprise on the combatants; but when the one had driven his rival to a longer distance than usual, the victor set upon the unoffending Quit, who soon yielded the point, and retired, humbly

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idea of the form of one of these tropic gems, painted against the sky. I have observed all our three species at one time engaged in sucking the blossoms of the moringa at Content; and have noticed that whereas Polytmus and Mango expand and depress the tail, when hovering before flowers, Humilis, on the contrary, for the most part *erects* the tail, but not invariably. The present is the only Humming-bird that I am acquainted with, that has a real song. Soon after sunrise in the spring months, it is fond of sitting on the topmost twig of some mango or orange tree, where it warbles, in a very weak but very sweet tone, a continuous melody, for ten minutes at a time: it has little variety. The others have only a pertinacious chirping."

"One day in June," observes Mr. Gosse, while speaking of their mode of nidification in the zig-zag terraces cut in the mountain roads of Jamaica, "I found two nests attached to twigs of bamboo, and one just commenced. Two parallel twigs were connected together by spiders' webs, profusely but irregularly stretched across, and these held a layer of silk-cotton, which just filled up the space (about an inch square) between them. This was the base. The others were complete cups of silk-cotton exceedingly compact and neat, ornamented outside with bits of gray lichen, stuck about. Usually the nest is placed on a joint of a bamboo branch, and the diverging twigs are embraced by the base. The nest is about the size of half a walnut-shell, if divided not lengthwise, but transversely. To see the bird sitting in this tiny structure is amusing. The head and tail are both excluded, the latter erect like a wren's: and the bright eyes glance in every direction. One of these contained two eggs, the other a single young one nearly fledged." * * * "Several times I have enclosed a nest of eggs in a gauzed cage, with the dam, taken in the act of sitting; but in no case did she survive twenty-four hours' confinement, or take the slightest notice of her nest. When engaged in the attempt to domesticate a colony of Polytmus, an opportunity offered to add this minute species to my aviary. For at that time two large tamarind-trees very near the house were in full blossom, and round them the Vervain Humming-bird was swarming. They flocked together like bees, and the air resounded with their humming, as if in the neighbourhood of a hive. We caught several of them with the net, but could make nothing of them: they were indomitably timid. When turned into the room, they shot away into the loftiest angle of the ceiling, and there hovered motionless, or sometimes slowly turning as if on a pivot, their wings all the time vibrating with such extraordinary velocity as to be visible only as a semicircular film on each side." * * * "The spirit of curiosity is manifested by this little bird as well as by the larger species. When struck at, it will return in a moment, and peep into the net, or hover just in front of one's face." The magnificent work of *Mr. Gould* on this family, and the no less elegant and admirable book of *M. Bourcier*, will leave little to be done in the illustration of the members of this "angelically graceful group."

TROGON. (*Curucui.*) A genus of Scansorial birds, mostly inhabitants of South America. They differ so much in the various stages of growth, that it has caused considerable confusion of species; but as they all agree in their general habits of life, the description of one will suffice. — Trogon Curucui. This bird is ten inches and a half in length: beak pale yellow, the under mandible armed with stiff black bristles; head, neck, back, rump, and upper tail-coverts shining green, with a blue gloss in certain lights; wing-coverts bluish-gray, marked with many undulating black lines; quills black, with part of the shafts white; the breast, belly, sides, and under tail-coverts of a beautiful red; thighs dusky; upper surface of the tail green, except the three outer feathers, which are blackish, and crossed with narrow transverse lines of gray; tail wedge-shaped; legs brown. It is a very solitary bird, being found only in the thickest forests; and in the pairing time the male has a very melancholy note (by which his haunts are discovered), which is never uttered at any other time than while the female is sitting, for as soon as the young make their appearance he becomes again perfectly mute. They begin to pair in April, and build in the hole of a rotten tree, laying three or four white eggs, about the size of a pigeon's, on the decayed dust, or if there be no dust, they bruise the sound wood into powder by means of their strong bill. The young when first hatched are quite destitute of feathers; the head disproportionately large, and the legs very long: the old birds feed them with small worms, caterpillars, and insects; and when able to shift for themselves, desert them and return to their solitary haunts till August or September; when they are again instinctively prompted to produce another brood. To this genus belongs the gorgeous long-tailed Trogon or *Quezal*, the feathers of which were allowed to be worn only by Mexicans of the highest rank in former times.

Mr. Edwards thus speaks of those he saw while pursuing his voyage up the Amazon. "There were half a dozen varieties, differing in size — from the *T. viridis*, a small species whose body was scarcely larger than many of our sparrows, to the Curucua grande (*Cularus auriceps*), twice the size of a jay. All have long spreading tails, and their dense plumage makes them appear of greater size than the reality. They are solitary birds; and early in the morning, or late in the afternoon, may be observed sitting, singly or in pairs, some species upon the tallest trees, and others but a few feet above the ground, with tails outspread and drooping, watching for passing insects. Their appetites appeased, they spend the remainder of the day in the shade, uttering at intervals a mournful note, well imitated by their common name, *curuqua*. This would betray them to the hunter, but they are great ventriloquists, and it is often impossible to discover them, although they are directly above one's head. The

down. Their feathers were so loose, that, in falling when shot, they almost invariably lost many; and thus, together with the tenderness of their skins, made them the most difficult of birds to preserve."

TROOPIAL. (*Cassicus: Icterus: Xanthornus.*) A name applied to one or more genera of Passerine birds, in which the beak is large, conical, thick at the base, and very sharp at the point. Their manners somewhat approach the Starlings: they frequently construct their nests close together, and feed on insects and grain; and when in numerous flocks they commit great ravages in cultivated districts, especially in maize plantations. In his voyage up the river Amazon, in 1846, Mr. Edwards was much struck with their nests, and from his lately published narrative we make the following extract:—"The most singular nests, and most worthy of description, were those of the Troopials (*Cassicus icteronotus*, Swain.), a large black bird, much marked with yellow, and frequently seen in cages. Their native name is Japim. They build in colonies pensile nests of grass, nearly two feet in length, having an opening for entrance near the top. Upon one tree standing in the middle of the lake, not more than ten feet high, and the thickness of a man's arm, were forty-five nests of these birds, built one upon another, often one depending from another, and completely concealing all the tree-top except a few outermost leaves; at a distance the whole resembled a huge basket. Part of these nests belonged to the Red-rumped Troopial (*C. hæmorrhous*); and a singular variety of Oriole, the Ruff-necked of Latham, called Araona or Rice-bird, after the fashion of our cow-bird, deposits its eggs in the Troopials' nests, leaving the young to the care of their foster-mothers. Usually Troopials build nearer houses, and are always welcome, being friendly sociable birds, ever ready to repay man's protection by a song. Often in such situations large trees are seen

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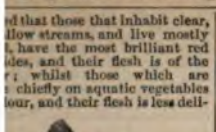
d that those that inhabit clear, llow streams, and live mostly t, have the most brilliant red ides, and their flesh is of the r; whilst those which are chiefly on aquatic vegetables lour, and their flesh is less deli-



UT.—(SALMO FARIO.)

ommon River Trout is gene- elve to fifteen inches long, and arters to a pound and a half in times, however, but not often, exceeding it: the form of the ; the eye large, the irides sil- inge of pink; the teeth nume- nd curving inwards, extending ole length of the vomer: the he dorsal and ventral outline r; and the scales small. The back and upper part of the sides numerous dark reddish-brown illow-brown ground; about a red spots along the lateral line, her red spots above and below part of the sides golden yellow; er surface silvery white; dorsal light brown, with numerous spots; the adipose fin brown, ith one or two darker brown lged with red: the pectoral, nal fins uniform pale orange- female fish is of a brighter and l appearance than the male. hat flow rapidly over gravelly oms, the Trout are generally r the brilliancy and beauty of d colours: and they are finest and flavour from the end of rds the end of September; an d by the greater quantity and tritious food obtained during Dr. A. T. Thomson remarks pecies of Trout has its pecu- lour: but the common Trout autiful of its class: the varia- nts and spots, from golden- mon and greenish-black, are , and depend, in a great mea- ature of its food; for the co- ays the most brilliant in those on the water-shrimp; and , the most highly prized for t is a curious fact that the the colours is not diminished dies; for, even after he has rith for an hour or longer by ngler, and at length is brought his side to the margin of the rown upon the bank flounder- ing with distant and feeble either knocked on the head, or exhaustion, his scaly splendour is fore."

It is observed that during the day the larger-sized fish move but little from their accustomed haunts; but towards evening and during the night they rove in search of small fish, insects, and their various larvæ, upon which they feed with eagerness. With no food, however, do they seem so delighted as with the May-fly. The young Trout fry may be seen throughout the day sporting on the shallow gravelly scours of the stream, where the want of sufficient depth of water, or the greater caution of larger and older fish, prevents their appearance. The season of spawning with the Trout is generally in October, at which time the under jaw of the old male exhibits in a smaller degree the elongation and curvature observed in the male Salmon. The stomach of this fish is uncommonly thick and strong; but this circumstance is observed to be nowhere so remarkable as in those found in some of the Irish lakes, and particularly in those of the county of Galway. These are called Gillaroo Trouts: on the most accurate examination, however, it does not appear that they are specifically different from the common Trout, but by living much on different kinds of Crustacea, and swallowing small stones at the same time, their stomachs acquire a much greater degree of thickness, and a kind of muscular appearance, so as to resemble a sort of gizzard. [See SALMON-TROUT.]

TRUMPET-FISH. (*Centriscus scolopax.*) This is a singular looking small Acanthopterygious fish, sometimes called the Sea Snipe. Its body is of an oval shape, and it is distinguished by its long tubular beak, which seems well adapted for drawing from among the sea-weed and mud the minute Crustacea upon which it is supposed to feed. On the back is a slight ridge; and the first dorsal fin is armed with a strong, pointed spine, movable and serrated, constituting a formidable weapon of defence. The colour of the back is red, the sides lighter red; the sides of the head and belly silvery, tinged with a golden hue; the scales on the body hard and rough; and the fins of a grayish white. The Trumpet-fish is found in the Mediterranean, and the flesh is reckoned good. [See AULOSTOMA.]

TRUNK-FISH. [See OSTRACION.]

TRYGON. [See RAY: STING-RAY.]

TUBICOLÆ. The name of an order of *Anellidæ*, comprehending those which live in tubes. One of the commonest of these is the *Serpula*, the shell of which is formed of calcareous matter, resembling that of the shells of Mollusca, and apparently secreted from the surface of the body in a similar manner. They are generally found clustering in masses, attached to the surface of stones, shells, or other bodies, which have been for any length of time immersed in the sea, and more or less contorted according to the position in which they grow. The animal residing in this shell has its branchial filaments or gill-tufts all assembled round the head: where they form a pair of fan-like appendages, usually possessing very

and lengthen their tubes as the coral is built up around them. Numerous smaller species are also found on our own coasts, some of which are remarkable for the brilliant hues of their expanded gills. Others there are which do not form their tubes by a calcareous exudation from their own bodies, but by cementing together particles of shell, sand, &c., by means of a glutinous secretion.

TUBIFERA. The name given by Lamarck to an order of the class *Polypi*, comprising those which are united upon a common substance fixed at its base, and whose surface is wholly or partially covered with retractile hollow tubes.

TUBULARIA. The name of a genus of Corallines which have tubes of a horny substance, simple or branched, from the extremities of which the polypes are protruded. Many of them are found in stagnant fresh water; but the *Tubularia marina* have two ranges of tentacula, the exterior as rays, the interior as a tuft.

TUBULIBRANCHIATA. An order of hermaphrodite Gasteropodous Molluscs, comprehending those which have the shell in the form of a more or less irregular tube in which the branchiæ are lodged.

TUCUTUCO. (*Ctenomys Brasiliensis.*) A curious small animal, native of South America, described by Mr. Darwin as a rodent, with the habits of a mole. It is extremely abundant in some parts of the country, but is difficult to be procured, and still more difficult to be seen when at liberty. It lives almost entirely under ground, and prefers a sandy soil with a gentle inclination. The burrows are said not to be deep, but of great length. They are nocturnal in their habits; and their principal food is afforded by the roots of plants, which is the object of their extensive and superficial burrows. This animal is universally known by a very peculiar noise, which it makes when beneath the

al condition," &c. &c. "It is mark, that very lately the Asci- again played a part in that question of the distinction be- ils and vegetables." This part is pursued, with much ability, from which the foregoing is d to which we beg to refer our

. (*Thynnus vulgaris.*) This ygious fish has been known and rom a very remote period, and rms a valuable source of profit tants of the northern coasts of ancan and the island of Sicily, e summer season they resort in nd are taken in large nets, or what the Italians call the *tan*- ugh bearing a general resem- e Mackerel in form, it is a far touter fish. Each jaw is fur- a row of small sharp-pointed ly curved inwards; the tongue f the mouth very dark coloured; re covered with long, narrow, s; the operculum smooth: the nal fins are each followed by inlets; and the tail is crescent- e upper part of the body is very the belly a light gray, spotted white: the first dorsal fin, pec- entrals, black; the second dorsal arly flesh-colour, with a silvery lets above and below yellowish, black. Mr. Yarrell, quoting the Couch, states that "the Tunny

Y.—(THYNNUS VULGARIS.)

he Cornish coast in summer and it is not often taken, because it allow a bait, or at least the e no bait that is acceptable to size and strength seldom suffer e entangled in their nets. It lchards, Herrings, and perhaps small fishes; but the Skipper) seems to be a favourite prey; nly compels it to seek another safety, but will also spring to a height after it, usually across at the same time attempting to its prey with its tail."

ny sometimes acquires an in- some having been taken which ine feet in length, and weighed d pounds: the specimens, how- t usually exceed from three to The flesh is considered very de- gh very solid food; as firm as t of a finer flavour. It is dressed of ways in France; served as a up, plain broiled or fried, made r pickled and eaten cold, as we almon. [See BONITO.]

TUPAIA. A genus of remarkable insectivorous animals, of which there are only three species at present known, and these are found in Sumatra and Java. Their habits are diurnal, and they feed on fruit and insects; but instead of being decidedly terrestrial, they lead the life of Squirrels, whose appearance they greatly resemble, and whose sprightliness and activity they almost rival. They have soft glistening hair and a long bushy tail; and were it not for their long, pointed muzzle, they could not be easily distinguished at a distance from Squirrels. The name of *Banxring* is as often given to this animal as *Tupaia*.

TURBINELLA. A genus of marine Mollusca, inhabiting a large, heavy, and rather fusiform shell; turbinated; thick and wide near the apex; spire short; aperture rather narrow, terminating anteriorly in an open canal; left lip with from three to five distinct plaits, which are at right angles with the axis of the shell. They are found in the Indian and African oceans.

TURBO; TURBINIDÆ. A genus and family of Gasteropodous Mollusca, characterized by having a shell of a regular turbinated form, with an entire and rounded mouth. The largest and perhaps the best-known species is the *Turbo marmoratus;* but there are numerous others; and we cannot, perhaps, give a clearer or more interesting account of the genus than is to be found in the "Popular Conchology" of Agnes Catlow: "*Shell* rather turretted, base not flattened; mouth round; lips not united; outer lip thin; an operculum, shelly and solid. *Animal*, head having two pointed tentacula, with eyes at the base; foot short. Thirty-four species recent, and four fossil. The shells of this genus, if placed upon their mouths, will stand steadily in that position, with the axis very much inclined. They are brought from China, India, Africa, &c. The *Turbo littoreus*, or common Periwinkle, is used by mankind as an article of food, and is found on the shores of England in great numbers. In Sweden, where they also abound, they serve to prognosticate the approaching state of the weather; the peasants having observed that whenever the periwinkles ascend the rocks it is a sure sign of a storm being near, as their instinct teaches them to place themselves out of the reach of the dashing of the waves; on the contrary, when they make a descent upon the sand it is an indication of a calm. In hot countries some species are often seen on the trees near the coast, and on the rocks elevated above the surface of the water; they remain stationary on the latter during the hottest hours, even when it is painful to walk on them from their great heat: they leave the water early in the morning, but return at night. These circumstances prove that, although marine, many species are amphibious. These shells are often highly iridescent; and the mouth in some species, as the *Turbo chrysostomus*, is of a deep and beautiful golden colour."

TURBOT. (*Pleuronectes maximus.*) Of all our Flatfishes this is both the best and

TURKEY.—(MELEAGRIS GALLOPAVO.)

TURKEY.—(MELEAGRIS GALLOPAVO.)

e end of the feathers; some are white; others perfectly white; lso a beautiful variety of a fine r colour, with the greater quills e, and the tail of a dirty white; f them the tuft of black hair on is prevalent. The young males out the tuft on the breast till they three years old. Great numbers in Norfolk, Suffolk, and other whence they are driven to the arkets in flocks of several hun- e drivers manage them with fa- neans of a bit of red rag tied to a which, from the antipathy these to that colour, effectually drives ard. The females lay their eggs ring, generally in a retired and lace, as the male will often break ey are usually from fourteen to number, white mixed with red- llow freckles: the female sits with persevereance, that if fresh eggs be into the nest immediately upon being hatched, she will long con- business of incubation; but in this e has seldom more than one hatch n. Young Turkeys require great ring, being subject to a variety of om cold, rain, and dews; but as ey are sufficiently strong, the hen them entirely, and they are es- during the utmost rigour of our

tions of the male, when agitated e, or inflamed with rage, are very those of the Peacock: he erects d spreads it like a fan, whilst his op and trail on the ground, and at the same time a dull, hollow e struts round and round with a ce, assumes all the dignity of the tic of birds, and every now and ts out abruptly into a most un- urgle. The familiar name of this said, originated in an erroneous it originally came from Turkey.

ULLATED TURKEY. (*Meleagris* This magnificent species is a native ra, whence it has been brought his country and preserved in the the Earl of Derby. It is a much ddd bird than the common Turkey, other characters may be distin- the eye-like marks on the tail and rts.

EY BUZZARD. (*Cathartes aura.*) rapacious bird belonging to the family, and often called the VULTURE. It inhabits a vast range y in the warmer parts of the Ame- tinent, but in the northern and ates of the Union it is partially , the greater part retiring to the he approach of cold weather. The uzzard is two feet and a half in d with wings extended upwards of in breadth. The bill from the the mouth is almost two inches f long, of a dark horn colour for of an inch from the tip, the nostril ehey wide slit or opening through it; the tongue is concave, cartilaginous, and finely serrated on its edges; eyes dark, and bright; the head and neck are furnished with a reddish wrinkled skin, beset with short black hairs; from the hind head to the neck feathers the space is covered with down of a sooty black colour; the fore part of the neck is bare as far as the breast-bone, the skin on the lower part or pouch very much wrinkled, but is not discernible without removing the plumage which arches over it; the whole lower parts, lining of the wings, rump, and tail-coverts, are of a sooty brown; the plumage of the neck is large and tumid, and, with that of the back and shoulders, black; the scapulars and secondaries are black on their outer webs, skirted with brown, and the latter slightly tipped with white; primaries plain brown; coverts of the secondaries tawny brown, centred with

TURKEY BUZZARD.—(CATHARTES AURA.)

black. The tail is twelve inches long, rounded, and of a brownish black; inside of wings and tail, light ash. The whole body and neck beneath the plumage are thickly clothed with a white down; the plumage of the neck, back, shoulders, scapulars, and secondaries, is glossed with green and bronze, and has purple reflections; the thighs are feathered to the knees; feet considerably webbed; middle toe three inches and a half in length; claws dark horn colour; legs pale flesh colour.

Much contention has arisen between certain naturalists with respect to the olfactory powers possessed by this bird; and there are some very amusing strictures on this subject in Mr. Waterton's Essays, in which the writer (who is a warm advocate for its existence in a high degree) seems to have by far the best of the argument. It appears, however, that their food is carrion, in search after which they are always soaring in the air. They continue a long time on the wing, and with an easy swimming motion mount and fall, without any visible motion of their wings. They have a wonderful sagacity (says Catesby) in smelling; no sooner is there a dead beast, but they are seen approaching from all quarters of the air, wheeling about and gradually descending and drawing nigh their prey, till at length they fall upon it.

pecially when eating.

In Mr. Darwin's Journal we read that "the Turkey-buzzard is a solitary bird, or, at most, goes in pairs. It may at once be recognized from a long distance by its lofty, soaring, and most elegant flight. It is well known to be a true carrion-feeder. On the west coast of Patagonia, among the thickly-wooded islets and broken land, it lives exclusively on what the sea throws up, and on the carcasses of dead seals. Wherever these animals are congregated on the rocks, there the Vultures may be seen. . . . They certainly may be called gregarious, for they seem to have pleasure in society, and are not solely brought together by the attraction of a common prey. On a fine day a flock may be observed at a great height, each bird wheeling round and round without closing its wings, in the most graceful evolutions. This is clearly done for sport sake, or perhaps is connected with their matrimonial alliances."

This bird is also abundantly found in Jamaica, where it goes by the name of the John Crow Vulture. Its history is given in Mr. Gosse's entertaining volume, from which we shall make a few extracts. The first relates to the disputed question of scent. "Those who ascribe the power which the Vulture possesses of discerning from a distance its carrion food, to the sense of seeing or the sense of smelling, confusively, appear to me to be both in error. It is the two senses, exerted sometimes singly, but generally unitedly, which give the facility which it possesses of tracing its appropriate food from far distances. I shall relate one or two occurrences which seem to me to be instances in which the sense of seeing and the sense of smelling were sometimes separately and sometimes unitedly exerted by the Vulture in quest for food.

"A poor German immigrant, who lived alone in a detached cottage in this town, rose from his bed after a two days' confinement by fever, to purchase in the market some fresh meat for a little soup. Before he

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burly of transient squalls, gathering together, and sweeping round in oblique circles, as the fitful gust favours them with an opportunity of rising through the blast, or winging onwards through the misty darkness of the storm. The effect which this imparts to a tropical landscape at a time when thick clouds are upon the mountains, and all vegetation is bending beneath the sudden rush of the tempest, as gust gathers louder and louder, is particularly wild and exciting. Ordinarily, however, in the evening, when the sea-breeze is lulling, and the fading daybeam is changing like the hues of the dying dolphin, they delight to congregate, and career at an immense height. At this time they soar so loftily, that they are scarcely discernible as they change their position in wheeling from shade into light, and from light into shade. They seem as if they rose upward to follow the fading daylight, and to revel in the departing sunbeams, as, one after the other, the varying lines are withdrawn, or irradiate only the upper heavens."

TURNIP-FLEA. (*Haltica nemorum.*) The generic description of this small Coleopterous insect will be found under the article HALTICIDÆ, which refers to the "flea-beetles" generally. The Turnip-flea, or more properly Turnip Flea-beetle, is one of these HALTICÆ, which lays waste our turnip-fields, devouring the seed-leaves of the plants as soon as they appear above the ground, and continuing their ravages upon new crops throughout the summer. It is stated in 'Young's Annals of Agriculture,' that the loss in Devonshire alone, in one season, from the destruction of the turnip crops by this little insect, was estimated at one hundred thousand pounds sterling. We could scarcely believe that so small a creature was capable of causing perceptible injury to vegetation; but what these beetles want in size, is made up by their numbers and voracity; the extent of the injury is also much increased by the circumstance of their attacking, when young, many vegetables, and not gnawing the young leaves, like most other insects, only on the edge, but eating their surface, piercing them like a sieve, and disturbing the cellular tissue; thus preventing their growth, and finally causing the total destruction of the plant.

The ravages of the Turnip Flea-beetle have naturally attracted great attention, and have caused many and various experiments to be tried with a view of checking them. The chief object of the farmer should be to accelerate as much as possible the growth of the turnip as soon as it appears above ground, and to keep the insects from the crop until the plants are in the rough leaf, when they are secure from danger. Many practical men consider that the careful and systematic use of lime will, in a great degree, obviate the evil, and indeed there is good reason to expect that it will effectually protect plants from the various kinds of flea-beetles, if dusted over them, when wet with dew, in proper season. Watering plants with alkaline solutions, *it is said, will kill the insects without injuring the plants.* The solution may be made by dissolving one pound of hard soap in twelve gallons of the soap-suds left after washing. Kollar very highly recommends watering the leaves of plants with an infusion of wormwood, which prevents the flea-beetles from touching them. Sprinkling with road-dust also, while the young plants are still wet with dew, is also strongly recommended.

TURNIX. A genus of Gallinaceous birds closely allied to the Quails, containing several species, one of which (*T. Andalusica*), the Andalusian Quail, has been shot in this country; to which it is a very rare and stray visitor.

TURNSTONE. (*Strepsilas interpres.*) A small Grallatorial bird, met with in almost every part both of the northern and southern hemispheres. They reside on the sea shores, and on the gravelly borders of lakes and rivers; are most abundant in the northern parts of Europe, less frequent in the temperate regions, and extremely rare to the south. The Turnstones have a short bill, thick at the base, and narrowing gradually to the point; and with this they turn over the stones on the sea-shore, in quest of the small molluscous and crustaceous animals on which they feed. They breed in high latitudes, and migrate towards the tropics for the winter season; visiting our shores in August, and departing towards the north in the spring. They lay four eggs of an olive colour, spotted with black.

TURRILITES. A genus of fossil shells, occurring only in the chalk marl. They are spiral and turreted; whorls contiguous and apparent; septa sinuous and lobate, perforated by a siphon; aperture rounded, with the outer lip expanded.

TURRITELLA. A genus of Mollusca, the shell of which is very long, and pointed at the apex, with numerous whorls, usually transversely striped; aperture round; lips thin, and disunited at the upper part; operculum horny. The animal is furnished with two long tentacula, with eyes at the base. The shells of this genus are all marine, and many of the species found in the Eastern seas attain a very large size, but none are known to possess vertical ribs or thickened bands. There are about a dozen species recent, and as many fossil.

TURTLE. (*Chelonia.*) The Marine Tortoises, or Turtles (*Chelonidæ*), as they are usually called, differ from the *Testitudinata*, or Land Tortoises, in many essential points, although their exterior, like that of the latter, is composed of a strong bony covering or shield, in which are imbedded the ribs, and which is coated externally by hard horny plates. Their distinguishing characteristics are the compressed and paddle-like form of the feet, particularly the anterior pair, which they use as oars, and by their means can move through the water in any direction, with considerable rapidity. Their progression on land is however, by this conformation, rendered much more difficult, so that it is only with laborious efforts they are enabled to

shuffle slowly along; while, from the flattened form of the carapace, they are unable to recover their natural position when turned upon their backs.

The Edible or Green Turtle (*Chelonia vaidus*) is one of the largest of this genus, often measuring above five feet in length, and weighing above five or six hundred pounds. Its shell consists of thirteen dorsal segments or divisions, surrounded by twenty-five marginal pieces; and its form is somewhat heart-shaped, or pointed at the extremity: its colour is a dull palish brown, more or less variegated with deeper undulations, but not exhibiting those strong and beautiful colours which so peculiarly distinguish that of the Imbricated Turtle. But so much is the flesh esteemed, that it not only furnishes an agreeable viand to those navigators who traverse the torrid zone, and is eaten by the inhabitants of our West India islands, but is in such high estimation in this country as a delicious luxury, that large quantities are continually imported for the supply of the London taverns alone. The eggs of this species are very fine.

"Of the Sea Turtles," says Catesby, "the most in request is the *Green Turtle*, which is esteemed a most wholesome and delicious food. It receives its name from the fat, which is of a green colour. Sir Hans Sloane informs us, in his History of Jamaica, that forty sloops are employed by the inhabitants of Port Royal, in Jamaica, for the catching them. The markets are there supplied with Turtle as ours are with butchers' meat. The Bahamians carry many of them to Carolina, where they turn to good account; not because that plentiful country wants provisions, but they are esteemed there as a rarity, and for the delicacy of their flesh. They feed on a kind of grass, growing at the bottom of the sea, commonly called turtle-grass. The inhabitants of the Bahama islands, by frequent practice, are very expert at catching Turtles, particularly the Green Turtle. In April they go, in little boats, to Cuba and other neighbouring islands, where, in the evening, especially in moonlight nights, they watch the going and returning of the Turtle to and from their nests, at which time they turn them on their backs, where they leave them, and proceed on, turning all they meet; for they cannot get on their feet again when once turned. Some are so large that it requires three men to turn one of them. The way by which the Turtle are most commonly taken at the Bahama islands is by striking them with a small iron peg of two inches long, put in a socket, at the end of a staff of twelve feet long. Two men usually set out for this work in a little light boat or canoe, one to row and gently steer the boat, while the other stands at the end of it with his weapon. The Turtle are sometimes discovered by their swimming with the head and back out of the water, but they are more often discovered lying at the bottom, a fathom or more deep. If a Turtle perceives he is discovered, he starts up to make his escape; the men in the boat pursuing him, endeavour to keep sight of him, which they often lose, and recover again by the Turtle putting his nose out of the water to breathe."

The Isle of Ascension is called by Sir J. E. Alexander "the head quarters of the finest Turtle in the world," and his account of it in that locality, which we subjoin, is really interesting: "We walked down to the Turtle ponds, two large enclosures near the sea, which flowed in and out through a breakwater of large stones. A gallows was erected between the two ponds, where the Turtle are slaughtered for shipping, by suspending them by the hind flippers, and then cutting their throats. About three hundred Turtle, of four and five hundred pounds each, lay on the sand, or swam about in the ponds: a sight to set an alderman mad with delight!

"In the hot months of January, February, March, and April, the females land at night; and waddling over the sands in the various bays of the island far above high-water mark,—for by a pole in the ponds the tide only rises here two feet,—they scrape up, by alternate scoops of their flippers, a hole deep enough to cover their bodies. Into this they get, sighing heavily, and deposit from one hundred and fifty to two hundred eggs; cover them up; leave them to the sun to hatch; and then waddle again towards the sea. Two stout hands are, meanwhile, on the look-out, watching the movements of the unfortunate Turtle; and running up to her after the completion of her task, one seizes a fore-flipper, and dexterously shoves it under her belly, to serve as a purchase; whilst the other, avoiding a stroke which might lame him, cants the Turtle over on her back, where she lies helpless. From fifteen to thirty are thus turned in a night; and six hundred had been so captured in the season of 1834. In the bays, where the surf, or heavy rollers, prevent the boats being beached to take on board the Turtle when caught, they are hauled out to them by ropes.

"No ships' crews are now allowed to turn Turtle, which is converted into a government monopoly; and two pounds ten shillings is the fixed price for each. Strange to say, from the time that the young Turtle, the size of a dollar, are observed scuttling down to the water, they are never seen again here until they are four or five hundred pounds weight; and how long they take to attain this great size, and where they spend the intermediate time, is as yet a mystery. I was surprised to hear that Turtle are kept in the ponds for a year and upwards without a morsel of food of any kind. They sometimes deposit their eggs in the sand, on the sides of the ponds; and in due time the little animals are allowed to make their escape to sea. One old female, called 'Nelson,' because one of her flippers had been carried off by a shark, was kept, out of respect, for two or three years in the ponds. She contrived, however, one night to crawl round the enclosure, and make her escape; but she was turned next year in Clarence Bay. Another Turtle was also turned there, a short time since, on the back shell of which was carved the name of a mate of a British vessel, who

ought it and sailed with it three weeks
: it is probable that, imagining it to
d, he had thrown it overboard. The
ay to send home Turtle from Ascen-
is to 'head them up' in a *sealed* cask,
ave the water changed daily by the
ole and a cock. Turtle, though the
nes of heat and cold are equally inju-
to them, should always arrive in hot
er in England. Thus, an unfortunate
n, on one occasion, took from Ascen-
wo hundred Turtle; and timing his
l badly, brought only four alive to
d!"

Darwin, in his Journal, when de-
g Keeling Island, gives an account of
er method of catching Turtle. He
—I accompanied Captain Fitzroy to
land at the head of the lagoon: the
el was exceedingly intricate, winding
gh fields of delicately branched corals.
w several Turtles, and two boats were
employed in catching them. The
od is rather curious: the water is so
and shallow, that although at first a
e quickly dives out of sight, yet in a
or boat under sail, the pursuers, after
ry long chase, come up to it. A man
ing ready in the bows at this moment
s through the water upon the Turtle's
; then, clinging with both hands by
hell of the neck, he is carried away till
nimal becomes exhausted, and is se-
. It was quite an interesting chase to
e two boats thus doubling about, and
men dashing into the water, trying to
their prey."

e IMBRICATED TURTLE (*Chelonia imbricata*) is so named from its scales overlapping each other at their extremities, in manner of tiles on the roof of a building. outline of the shell is more heart-shaped any other species, and terminates more ly: each of the middle row of scales on ack is also of an acute form at the tip, as a ridge or carina down the middle: and is smaller than in other Turtles; neck longer, and the beak narrower,

HAWKSBILL TURTLE.
(CHELONIA IMBRICATA.)

er, and more curved, so as to bear no nsiderable resemblance to the bill of a k; hence its common or popular name—*Hawksbill Turtle*. *The fore legs are longer than the rest of the tribe, and it is said that when turned or laid on its back, the animal* is enabled by their assistance to recover its former position, which no other Turtle can do. It is a native of the Asiatic and American seas, and is occasionally also found in the Mediterranean. Its general length is about three feet, though it is sometimes much larger, and in the Indian ocean in particular, specimens are said to have occurred of more than twice that size. The flesh is in no estimation as a food: but the lamellæ or plates of the shell are stronger, thicker, and clearer than in any other kind, afford the valuable substance called *tortoise-shell:* they are semi-transparent, and most elegantly variegated with whitish, yellowish, reddish, and dark brown clouds and undulations, so as to constitute, when properly prepared and polished, one of the most elegant articles for various ornamental purposes. "The goodness of tortoise-shell depends mainly on the thickness and size of the scales, and in a smaller degree on the clearness and brilliancy of the colours. The best is that of the Indian Archipelago; and the finest of this quarter is obtained on the shores of the Spice Islands and New Guinea." — *M'Culloch.*

The natural or general number of the dorsal pieces is thirteen; the marginal row consisting of twenty-five smaller pieces. This external coating is raised or separated from the bony part, which it covers, by placing fire beneath the shell; the heat soon causing the plates to start, so as to be easily detached from the bone. These plates vary in thickness, according to the age and size of the animal, and measure from an eighth to a quarter of an inch in thickness.

The CORIACEOUS TURTLE (*Sphargis coriacea*) differs from the rest of its tribe, not only in the form of its body, which is longer in proportion, but still more in its external covering, which is of a substance resembling strong leather, marked over the whole surface into small, obscurely subhexagonal and pentagonal subdivisions or lineations, which do not, however, detract from its general smoothness. Along the whole length of this leathery shield run five distinct, strongly prominent, tuberculated ridges, besides those which border the sides. There is no under or thoracic shell; and the general colour of the whole animal is dusky brown, paler beneath. The head is large, and the upper mandible notched at the tip in such a manner as to give the appearance of two large teeth or processes, between which, when the mouth is closed, is received the tip of the lower mandible. The fins or legs are large and long, and covered with a tough leathery skin; the tail is rather short and sharp pointed. This singular animal is a native of the Mediterranean sea; it is occasionally seen both on the coasts of South America and Africa; and has been taken at different periods both on the coasts of France and England. Instances have been known of their being eight feet long, and weighing a thousand pounds.

The LOGGERHEAD TURTLE (*Testudo caretta*) is of extraordinary size, and the boldest and most voracious of any; but,

It is well known that the different kinds of great Marine Tortoises, or Turtles, at their appointed times every year, deposit their eggs in the sand, on the shores of the sea, and banks of rivers where the strand is greatly declivous. There the females hollow out a strong vaulted nest, wherein the eggs (amounting to a hundred laid at one time) may have the benefit of the concentrated rays of the sun, so as to enjoy an equable heat, as in the case of eggs under a sitting hen. The shell of these eggs is generally solid, and their form globular, or nearly so.

TURTLE-DOVE. (Columbæ *Turtur*.) This species of the Columbidæ family — whose gentle and soothing accents when "cooing" to its mate, combined with its general deportment, have caused it to be regarded as the most perfect emblem of connubial attachment — arrives in this country late in the spring, and departs about the latter end of August; during which time

TURTLE DOVE.—(COLUMBA TURTUR.)

the birds pair, breed, and rear their young. In warmer climates, however, they are supposed to breed several times in the year. In length the Turtle-dove is rather more than

less of the white at the tip; these
y lengthen to the four middle ones,
re wholly dark slate; all of them
wards the points, the middle ones
. The female is an inch shorter,
e rich silky blue on the crown, and
gether less brilliancy of colour. The
this bird is considered much superior
f the wild pigeon; but its seeming
ce in man, the tenderness of its
nd the innocency attached to its
r, are, with many, its security and
on.

OCK (MOTHS). A name given by
rs to Moths of the genera *Dasychira*
ata.

UYU. A local name for the *Mycteria*
ana, a Grallatorial bird, which when
wn is upwards of six feet in height.
ral plumage is white; its neck is
feathers, and, for two-thirds of its
rom above, black; the remainder is
k red. Its bill is about fifteen inches
d by its habit of striking the mandi-
ether a loud clattering noise is pro-
Though shy and difficult to be got
are occasionally domesticated.

ANT FLYCATCHER, or KING-
(*Tyrannus intrepidus.*) This very sin-
pecies of a group of Passerine birds,
as the Flycatchers, has received its
names of *tyrant* and *king*, from its
linary behaviour, and the authority
es over all others, during the time
ding. It is eight inches long, and
n in extent; the general colour above
k slaty ash; the head and tail are
black; the latter *even* at the end, and
h white; the wings are of a brownish
e quills and wing-coverts are edged
ll white; the throat, and all the rest
wer parts, are pure white; the plu-
n the crown (though not forming a
frequently erected, and discovers a
t of brilliant orange, which when the
lie close, is altogether concealed.
is very broad at the base, overhang-
the point, and notched, of a glossy
olour, and furnished with bristles at
; the legs and feet are black, seamed
ray. The female differs chiefly in
f a browner cast on the upper parts,
ving a narrower border of duller
n the tail. In the breeding season,
re told by Wilson, in his 'American
logy,' the Tyrant Flycatcher's ex-
fection for his mate, and for his nest
ung, makes him suspicious of every
at happens to pass near his residence,
he attacks, without discrimination,
ntruder. In the months of May,
nd part of July, his life is one con-
scene of broils and battles; in which,
r, he generally comes off conqueror.
and *crows*, the bald eagle, and the
lack eagle, all equally dread a ren-
with this dauntless little champion,
soon as he perceives one of these last
thing, launches into the air to meet
ounts to a *considerable height* above
d *darts down on his back, sometimes*
fixing there to the great annoyance of his sovereign, who, if no convenient retreat or resting-place be near, endeavours by various evolutions to rid himself of his merciless adversary. But the King-bird is not so easily dismounted. He teazes the eagle incessantly, sweeps upon him from right and left, re-

TYRANT FLYCATCHER.
(TYRANNUS INTREPIDUS.)

mounts, that he may descend on his back with the greater violence; all the while keeping up a shrill and rapid twittering; and continuing the attack sometimes for more than a mile, till he is relieved by some other of his tribe equally eager for the contest. . . . . All his turbulence, however, vanishes as soon as his young are able to shift for themselves; and he is then as mild and peaceable as any other bird."

His usual mode of flight is singular. The vibrations of his broad wings (says this observing writer, whom we quote with slight deviations), as he moves slowly over the fields, resemble those of a hawk hovering and settling in the air to reconnoitre the ground below; and the object of the King-bird is no doubt something similar, viz. to look out for passing insects, either in the air, or among the flowers and blossoms below him. In fields of pasture he often takes his stand on the tops of the mullein, and other rank weeds, near the cattle, and makes occasional sweeps after passing insects, particularly the large black gadfly, so terrifying to horses and cattle. His eye moves restlessly around him, traces the flight of an insect for a moment or two, then that of a second, and even a third, until he perceives one to his liking, when, with a shrill sweep, he pursues, seizes it, and returns to the same spot again, to look out for more. This habit is so conspicuous when he is watching the bee-hive, that many intelligent persons are of opinion that he picks out only the drones, and never injures the working bees. Be this as it may, he certainly gives a preference to one bee, and one species of insect, over another. . . . Whatever antipathy may prevail against him for depredations on the drones, or, if you will, on the bees, this bird is greatly the farmer's friend, in destroying multitudes of insects, whose larvæ prey on the harvests of his fields. These noxious insects are the daily food of this bird; and he destroys,

the microscope. Whilst engaged in vestigation, Dr. Kirtland, of Portland, informed Mr. Lea of his ability to dis- sh the female and male shells of the pecies, without having recourse to the ed animal; and he says that a very series of examination satisfied him to the establishment of the difference es. The female, sustaining her very urthen, naturally requires, he observes, pace within the valves; hence an en- ent of the posterior portion of the generally found, differing in its form ous species.

ems to be a matter of doubt, according Lea, on what these animals subsist, had strong reasons for believing that feed on animalcules which are ever to exist in water, and which they separate from the constant stream they pass from the posterior part of ell, and which must be taken in at r part. This operation he witnessed ntly in a vessel in which he kept the e for some months. If the water was anged for twenty-four hours, he uni- found the animals quiet, but within minutes after it was changed they as mly commenced the passage of this nt stream, which he considers to be ult of the action of the separation of nalcules from the water. Referring fact of pearls being found in other ater bivalves, Mr. Broderip observes the brilliant and variously-coloured with which many of the species are and the extreme thickness of some of ells, are very remarkable. That pearls l be found in them will not surprise whose attention has been drawn to internal surface. Pennant remarks *Mya Margaritifera* of Linnæus (*Unio tus*) is noted for producing quantities rls, and formerly there were regular es in many of our rivers to obtain

As many as sixteen have been taken ne shell. The Esk and the Conway amous in this way. The latter river, days of Camden, was noted for them. chard Wynn, of Gwidir, chamberlain herine, queen to Charles II., is said to resented her Majesty with a Conway which is to this day honoured with a in the regal crown. Pennant, who this, adds, that the shells are called e Welsh, *Crigen Dilune*, or Deluge as if left there by the deluge. The rt, in Cumberland, also produced them; r John Hawkins, the circumnavigator entioned in the article MYA), had a for fishing that river. Britain, indeed, arly acquired a reputation for its for, according to Suetonius, they Cæsar's inducement for undertaking itish expedition. This, however, does em very probable. Pliny, indeed, of the pearls of our island as small -coloured, and refers to the breastplate Cæsar himself had brought home and ted to Venus Genetrix in her temple, that he wished it to be understood he offering was formed of British ."

UNIPELTATA. A family of Crustacea, belonging to the order *Stomapoda*, and comprising one genus only, *Squilla* [which see].

UNOGATA. The name given by Fabricius to a part of the Arachnida, order *Pulmonaria*, and comprehending the *Scorpions* [which see].

UPHOLSTERER BEE. (*Osmia papaveris.*) This name is given to a species of wild bee, found in France, belonging to the genus *Osmia*. These ingenious artificers excavate holes in the earth for the reception of their young, and line them with an elegant coating of flowers or leaves; an operation which is so pleasingly described in Messrs. Kirby and Spence's Introduction to Entomology, that we beg to transfer the account they give of it, from their pages to our own. "This little bee, as though fascinated with the colour most attractive to our eyes, invariably chooses for the hangings of her apartments the most brilliant scarlet, selecting for its material the petals of the wild poppy, which she dexterously cuts into the proper form. Her first process is to excavate in some pathway a burrow, cylindrical at the entrance, but swelled out below to the depth of about three inches. Having polished the walls of this little apartment, she next flies to a neighbouring field, cuts out oval portions of the flowers of poppies, seizes them between her legs, and returns with them to her cell; and though separated from the wrinkled petal of a half-expanded flower, she knows how to straighten their folds, and, if too large, to fit them for her purpose by cutting off the superfluous parts. Beginning at the bottom, she overlays the walls of her mansion with this brilliant tapestry, extending it also on the surface of the ground round the margin of the orifice. The bottom is rendered warm by three or four coats, and the sides have never less than two. The little Upholsterer, having completed the hangings of her apartment, next fills it with pollen and honey to the height of about half an inch; then, after committing an egg to it, she wraps over the poppy lining so that even the roof may be of this material, and lastly closes its mouth with a small hillock of earth. The great depth of the cell compared with the space which the single egg and the accompanying food deposited in it occupy, deserves particular notice. This is not more than half an inch at the bottom, the remaining two inches and a half being subsequently filled with earth."

UPUPA. [See HOOPOE.]

URAN-UTAN. [See ORANG.]

URANIIDÆ. A family of Lepidopterous insects, belonging to the HETEROCERA; comprising several very anomalous exotic genera, which, from their apparently occupying a station between the Hesperiæ and Sphinges, Latreille named *Hesperi-Sphinges*. Since the discovery of its preparatory states, however, it is allowed to belong to the Heterocerous section of the order. Mr. Westwood tells us, that "the splendid

er considers the Aurochs to be a species
man has never subdued; and observes,
Ossemens Fossiles, that if Europe pos-
a *Urus*, a *Thur* of the Poles, different
he *Bison* or the *Aurochs* of the Ger-
It is only in its remains that the spe-
n be traced; such remains are found,
skulls of a species of ox different from
rochs, in the superficial beds of certain
a. This, Cuvier thinks, must be the
rus of the ancients, the original of our
ic ox, the stock perhaps whence our
attle descended; while the Aurochs
present day is nothing more than the
or Bonasus of the ancients, a species
has never been brought under the
[See Ox: Bison.]

IPIRE-BAT. (*Vampirus spectrum.*)
at is a native of South America, of a
-brown colour, and as large as a
. It is said, by Piso, to "seek out
kind of animal and suck their blood."
act has often been most circumstan-
related, and as often positively denied;
we compare the accounts of many
respectable modern travellers, the
f the statement will appear to be fully
shed. Captain Stedman, who had
f been bitten, thus describes the ope-
"Knowing by instinct that the
they intend to attack is in a sound
r, they generally alight near the feet,
while the creature continues fanning
its enormous wings, which keeps
ol, he bites a piece out of the tip of
eat toe, so very small, indeed, that
ad of a pin could be scarcely re-
into the wound, which is conse-
y not painful; yet through this orifice
itinues to suck the blood until he is
l to disgorge. He then begins again,
us continues sucking and disgorging
is scarce able to fly; and the sufferer
ten been known to sleep from time
ternity." To the same effect is the
ny of several other naturalists who
aid attention to the subject, among
may be named Messrs. Darwin, Swain-
nd Waterton; the last of whom ob-
that "Europeans may consider as
s the stories related of the Vampire;
r my own part, I must believe in its
of sucking blood from living animals,
ave repeatedly seen both men and
which had been sucked, and, more-
have examined very minutely their
g wounds." But he admits that he
never find out how the Vampires ac-
draw the blood; and that he con-
as ignorant of the real process as
he had never been in the Vampire's
y. "For the space of eleven months,"
is most amusing writer, "I slept alone
loft of a woodcutter's abandoned house
forest; and though the Vampire came
out every night, and I had the finest
unity of seeing him, as the moon shone
h apertures where windows had once
I never could be certain that I saw
ake a positive attempt to quench his
from my veins, *though he often ho-
ver the hammock.*"

VANESSA. A genus of Diurnal Lepidoptera belonging to the family *Nymphalidæ*, in most of the species of which the wings are angulated. The caterpillar has numerous bristly spines, and the pupa is much angulated and suspended by the tail. In Doubleday and Hewitson's work, descriptions and figures of the various forms will be found: we limit our notice to the British species, which are all eminently handsome.

VANESSA C. ALBUM; or COMMA BUTTERFLY. Of late years this insect appears to have become much more scarce than formerly, or it may have forsaken its old localities and found new ones: it frequents woods, thickets and gardens; and there are two broods in the year, one towards the end of June, the other in September. Wings above dark orange, with black or

COMMA BUTTERFLY.—(VANESSA C. ALBUM.)

UNDER-SIDE OF COMMA BUTTERFLY.

brown spots, and a brown posterior margin; on the disc of the anterior wings are two roundish spots, and near the interior margin two other larger spots; beneath, the anterior wings are dusky-brown, with a broad, irregular, green-marbled pale band near the posterior margin; posterior wings very similar, with a pure white crescent in the centre; near the posterior margin of all the wings is an irregular series of spurious ocelli. Body above dusky, with greenish hairs on the thorax: antennæ black above, brown annulated with white beneath. Caterpillar red-brown and yellow: it feeds on the hop, nettle, elm, gooseberry, and honey-suckle. The chrysalis is flesh-coloured, spotted with gold.

VANESSA POLYCHLOROS; or GREAT TORTOISE-SHELL BUTTERFLY. This insect frequents woody places and lanes where elms abound, and in some seasons it is particularly abundant in some situations. Wings above dark orange, with the base dusky,

and furnished with greenish hairs: the anterior with two transverse costal fascia; between which and the base is a somewhat ovate black spot; on the disc, and also near the interior margin, are two other spots: the hinder margin is black, with a series of pale crescents: on the posterior wings is a large black costal spot, with a yellowish patch adjoining; and the margin is black, with obscure bluish crescents; interiorly the wings are furnished with long tawny or greenish hairs: beneath, all the wings are clouded with black, with a broad ash-coloured fascia behind, in which is a series of bluish lunules: the anterior wings have three pale equidistant spots on the costa, and the posterior a white discoidal spot; the body is dusky, with tawny hairs; and the antennæ black. The caterpillar is brownish, with a yellow lateral stripe, and the spines slightly branched. It feeds chiefly on the elm; and while young, the brood continues under a silken web. The chrysalis is flesh-coloured, with golden spots on the neck.

Vanessa Urticæ; or Small Tortoise-shell Butterfly. This elegant and very prevalent British species has the wings above of a rich reddish orange, with the base and the hinder margin black, the latter with a series of blue crescents: the anterior wings above have the costal areolet mottled with black and tawny: on the costa are two large sub-quadrate black spots; at the base two others, placed obliquely; and posteriorly, on the disc, two small round ones: between the two large costal spots and the anterior basal one are two yellow spots, and towards the tip of the wing adjoining the posterior costal spot is a light one. The posterior wings are black at the base, powdered with tawny, and covered with long hairs: beneath, the anterior wings are pale, variegated with black, with a pale band marbled with brown, in which is a series of angular black spots. The body is dusky, with a greenish pubescence: the antennæ are marked with black and white rings, and the tip of the club is ochraceous. The Caterpillar of this species feeds chiefly on the nettle, and is found in lanes, gardens, &c.; it is about an inch in length, covered with bristles, and of a reddish-brown colour, marked with two greenish-yellow lines on the back, and one on each side. The chrysalis is grayish, with golden spots on the neck; sometimes the whole body is entirely golden; from which the words *chrysalis* and *aurelia* are supposed to have suggested themselves to entomologists to denote the pupa state of insects. Two broods occur every year—one early in spring, the other in autumn; and in Italy it continues on the wing in fine weather even in winter.

We may here take an opportunity of referring to a valuable paper in the proceedings of the Royal Society, recorded in vol. 15. of the *Annals of Natural History*, "On the Reproduction of lost parts in Myriapods and Insects," by G. Newport, Esq. F.R.S. Pres. Ent. Soc., &c. (communicated by Dr. Roget). It has long been known that the limbs of *Crustacea* and *Arachnida*, accidentally lost or designedly removed, are, in course of time, replaced by the growth of new limbs; but whether such a power exists in those insects, such as *Lepidoptera*, which undergo a complete metamorphosis, changing not only their form, but also their food and mode of life, in passing from the larva to the adult state, has been considered doubtful. "The first observation which led the author to believe that true insects might possess the power of reproducing lost parts, was that of a specimen of *Phasma* in the collection of the British Museum, in which the right anterior leg had evidently been reproduced. He then instituted a series of experiments on the larva of the *Vanessa urticæ*, or common nettle butterfly, which belongs to the order *Lepidoptera*, and undergoes complete metamorphosis. He removed some of the true legs of the larva, sometimes in their tibial portion, and sometimes at their base; in the first case, parts similar to those removed were *invariably reproduced* in different states of development, and in the latter *entire new limbs* were formed; in some instances, at the second change of the larva, when it passed into the pupa state; but in two or three instances no reproduction took place. At first view, this difference in the results might appear in favour the opinion that this reproduction of limbs depends on the existence of parts especially adapted to perform this function, and which, in those experiments that had failed to exhibit the phenomenon, had been themselves removed. But the author found that in every instance of the mutilations thus practised, the perfect insect possessed a coxa, or basilar part of the limb; and this was the case even in those in which a new organ was not reproduced. From this fact, taken in conjunction with the formation of new entire limbs in the *Julidæ* after the removal of every portion of the previous ones, the author infers that the power of reproduction resides in the whole of the organized tissues.

Vanessa Antiopa; Willow Butterfly, or Camberwell Beauty. The wings of this insect are of a reddish black or purplish hue above, with a broad, velvety-black posterior band, in which on each wing are seven or eight violet-blue spots; followed by a broad straw-coloured border, waved internally, and minutely speckled with black dots, particularly on the prominent angles of the wing. The anterior wings above have the costal areolet marked with white, and two large white spots near the tip. Beneath, all the wings are obscure black, with darker waves, and a broad white border on the outer margin. Body and antennæ dark brown. The Caterpillar is black, with a row of square dorsal spots, and the eight anterior prolegs red: it feeds on the willow, birch, and poplar. The chrysalis is dusky, with bluish and tawny spots. This species is remarkably irregular in its appearance, scarcely any being met with in some seasons, and then again appearing perhaps in immense numbers.

Vanessa Io, or Peacock Butterfly. This highly beautiful species, of extremely

occurs pretty abundantly in lanes, woods, and commons where nettles and thistles abound. The wings above are of a purplish hue, with the base and hinder margin dusky ash, and a large ocelliform spot

PEACOCK BUTTERFLY.—(VANESSA IO.)

on each wing, the posterior wings having towards the margin a large ocellus, with a large black pupil spotted with blue, and a gray iris, terminated anteriorly with a black crescent. The under side of the wings are glossy brown, marbled and spotted with black: the body is dusky, with rusty down; the antennæ blackish, the tip yellow. The Caterpillar is glossy black, spotted with white: the chrysalis green, dotted with gold.

VANESSA ATALANTA; or RED ADMIRAL BUTTERFLY. Common as this species is, it is one of the most splendid of the British butterflies; the intense black of its wings being so beautifully relieved by the red fascia and pure white spots, and the marbled veinings of its posterior wings beneath, defying the utmost efforts of the painter's skill. The wings above are deep silken black; the anterior with a central-belt orange-red band, sometimes bearing a round white spot towards the anal angle of the wing: between this and the tip are six white spots, the largest on the costa: and between them and the margin is a slight bluish wave: the posterior

RED ADMIRAL BUTTERFLY. (VANESSA ATALANTA.)

wings have a broad orange-red border, with a transverse series of black triangular dots, and some black spots on the cilia; the tip of the latter areolet is varied with bluish, and the black dot in the following areolet is also sometimes *externally edged with blue*: beneath, *the anterior wings have the central* band interrupted with white, and blue streaks; beyond these are seen the three larger spots of the upper surface; two imperfect ocelli occupy the place of two others; and the costal areolet is black, marbled with blue. Nothing can excel the beautiful variegations of the posterior wings, mottled with black, brown, and pale fulvous; in the middle of the anterior margin is a pale triangular spot, a band of obscure ocelli parallel with the hinder margin, and a streak of silken blue between this and the margin, all the wings, both above and below, are fringed with white, interrupted at the nervures with black. Body black above, grayish beneath; antennæ black, annulated with white, the tip rather yellow: palpi black above, white sides, and yellowish beneath. The caterpillar is greenish, or dusky, with a yellowish spotted line on each side: it feeds on the *Urtica urens* and *U. dioica*. The chrysalis is dusky, or gray, with golden spots.

VANELLUS. [See LAPWING.]

VANGA. A genus of Passerine birds, indigenous to South America, and allied to the Shrikes and Flycatchers. They are distinguished by a large beak, very much compressed throughout, its tip strongly hooked, and that of the lower mandible bent downwards.

VELIA. A genus of Hemipterous insects; belonging to which is a British species (*Velia currens*), commonly seen running on the surface of brooks. The antennæ are filiform, with the sheath of the sucker only two-jointed; the legs moderately long, and placed at equal distances apart.

VENEER [MOTHS]. A name given by collectors to Moths of the genus *Chilo*.

VENERICARDIA. A genus of Acephalous Testacea, inhabiting an almost round shell, the muscular impressions in which indicating that the animal has a resemblance to that of the Carditæ and Unio, both of which approach the Cardia in general form and in the direction of their ribs.

VENUS. A genus of Conchiferous Molluscs, which are found buried in the sand, at a short distance from the shore, particularly in hot climates. The recent species are very numerous; most of the animals serving as food for man; while amongst the shells are some so beautiful as to fully justify the name given to the genus. They are equivalve, inequilateral, nearly round or oval, transverse, externally rugose, striated, ribbed, cancellated or smooth; margins entire, simple, close; bosses slightly turned on one side; ligament external, and on the longest side.—"The species *Venus mercenaria* is cut by the North American Indians into beads, of which they construct their Wampum or treaty belts, and the shells are also used amongst them as money, and are made into ornaments for their dresses."

VERMES. The name by which ancient naturalists designated a class of all the lower animals resembling the earthworm, but com-

of analogy. Similarities of external form were made the basis of classification. The distinction between the resemblance of animals adapted for existence under similar conditions of the earth's surface and their relations to each other according to their organization, corresponding with their position in the series, could not be expected to strike the naturalist when his data were as yet so scanty. But as the discovery of species, the observation of their distribution and habits, and the anatomical investigation of their structure progressed, a new light opened on his mind, and he learned to separate forms merely analogous, and to combine such as had a true affinity of structure in well-defined divisions."

VERMETUS. A genus of Mollusca, consisting of only one species, *Vermetus lumbricalis*, which may be found in groups, twisted together in great numbers, in the seas near Senegal. The animal has two tentacula, with eyes at the base; foot cylindrical. The shell is thin, tubular, irregularly and slightly twisted; aperture round; apex pointed.

VERMILIA. A genus of *Annulata* composed of species of *Serpula*, and found on stones, shells, fuci, &c. They are attached by the whole length of their shell, no part being free. The tube is testaceous, cylindrical, gradually lessening at one end, and more or less twisted.

VESICULOSA. A group of Dipterous Insects, nearly allied to *Scenopinus*; with the wings deflexed at each side of the body; the antennæ very large, and covering the halteres; the head small and globular; the thorax very globose; the abdomen vesiculose; and the proboscis directed backwards, or wanting.

VESPA: VESPIDÆ. A family of sculptured Hymenopterous Insects, (including the common Wasp and Hornet,) which live in temporary societies, consisting of males, females, and workers or neuters. They are

ustrable by the weather. It has scribed by Reaumur in the sixth his 'Memoires;' in the British re are two specimens of this nest. urely attached to the branch of ir upper end, and vary much in a few inches, as in the Museum o two feet or even more. In the they are more or less round, and ar or five combs, while in the re of a long cylindrical shape, corresponding number of parti- tional combs are added to the the occupants increase in num- combs are horizontal, convex r side, and fixed to the walls of their whole circumference. The xagonal and open downwards, other nests constructed by the ach of the combs has a hole near through which access is obtained most apartments. The upper y a small round orifice near the he under side, which is more or haped.

eets which form these curious ave been observed by Lacordaire ve country. Their societies are each year, as happens with the climates, which, on the approach her, are nearly all cut off. The and in copse-wood, principally ions (at least in Guiana), and y suspended at a height of three from the ground. During the , from January to the middle of erfect nests are to be met with; and February the cells are in re filled with larvæ; in March ese decrease in number, and by ay scarcely any are to be found. thought to turn into females, nding room in their old nursery, d form new colonies, as when son returns, which is about the ue, nests are to be found in pro- nstead of only one female being is the case with our wasps, La- observed as many as a dozen ged in constructing their new oon as a series of cells is com- may be found in them, and the ually increased by the addition ts. In September the structure ished, and towards the end of No- most frequently completed. The f the preceding year continue before, but new larvæ were only them in abundance in September these are believed to turn into this is the case, the reverse takes he European wasps, the neuters first excluded.

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NEST OF HONEY WASP.—(MYRAPETRA.)

irregular, generally transverse, ridges. The entrances are artfully protected by pent roofs from the weather, which, in the rainy season, is sometimes very violent; they are also so intricately twisted, as to prevent the ingress of any moth or other enemy, at least of any size. The hardness of the whole mass must tend very much to protect its constructor from the attacks of insect or honey-seeking animals; and the natives, with some degree of probability, believe, that feline and other animals are deterred from taking the nest by the pointed knobs with which it is covered. The substance is hard, the texture close, and, when seen with a slight magnifying power, seems curiously matted. The natives say that it is principally formed of the dried dung of the Carpincho and dried rushes and underwood. The Carpincho is a species of Tapir or Water-hog, and is amphibious.

Many of the uppermost combs have the cells, in the middle, filled with a brownish red honey, which, in its present state, possesses scarcely any smell or taste. Azara,

HONEY-WASP.—(MYRAPETRA SCUTELLARIS.)

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In the account of his residence in various parts of South America, mentioned the fact of several *Wasps* of these countries collecting honey. The occurrence of honey in the combs of these *Myrapetra* confirms the accuracy of Azara's observation, and is made by a Vespidous insect having the first joint of the abdomen elongated into a pedicel.

VESPERTILIONIDÆ. The name given to a family of Bats, including most of those belonging to temperate climates. [See BAT.]

VICUGNA. A Ruminant quadruped of South America, belonging to the *Camelidæ* family, and bearing considerable resemblance to the Alpaca. They inhabit the mountain ranges, and are remarkable for the fineness of their wool, which has a texture that may be termed silken; and they are accordingly much in request.

VIPERIDÆ. A group of venomous snakes, of which there are many species and varieties diffused almost everywhere throughout the habitable globe, Africa and America being, however, far more infested by them than Europe. A description of the different kinds, after what we have said of these reptiles under their respective appellations, would be neither interesting nor instructive; we therefore pass on to the common Viper, occasionally met with by those whose occupations take them to our heaths, woods, and water meadows.

The COMMON VIPER or ADDER (*Vipera berus*) is the only poisonous reptile indigenous to this country; and is abundantly found in many parts of Scotland, England, and Wales, particularly in chalky and stony districts, frequenting heaths, dry woods, and banks. In Ireland it certainly does not exist. On the continent of Europe it is extensively distributed, being found from the northern parts of Russia to the south of Italy and Spain, and its presence is everywhere dreaded on account of its venom-

VIPER.—(*Vipera berus.*)

ous qualities. It seldom arrives at a greater length than two feet, though it is occasionally met with above three. The ground colour of the male is a dirty yellow; that of the female is deeper. The back is marked throughout its whole length with a series of rhomboidal black spots, to other at the points; the sides with triangular ones; and the tirely black. It is chiefly from the common black snake which in the latter is more bea tled; as well as by the head, wh than the body; but particularly which in the Viper, though it a point, does not run tapering length as in the other: where, th distinctions fail, the differenc can be discerned with ease. T the Viper is less virulent than of the poisonous serpents, bu ciently severe, in the warmer produce even the most fatal remedies usually employed are application of oil and the inte tration of ammonia.

The apparatus by which the p are inflicted, which render these other serpents so formidable, by Mr. Bell, in his work on tiles,' as follows:—On each side jaw, instead of the outer row o are found its non-venomous s exist two or three, or more, long tubular teeth, the first of wh than the others, and is attache movable bone, articulated to t bone, and moved by a muscle by which the animal has the po ing it. In a state of rest the backwards along the margin of is covered by a fold of skin about to be called into use, it means of a small muscle, and stand perpendicular to the bone itself is it as were perforated by tube, although completely enc ing at its basal and apical ori considered as formed merely round of a groove in the exteri tooth itself, and hence not in nected with the inner cavity of which exists the pulp upon w stance of the tooth is formed. the tooth, and consequently the of the tube just described, is o ose, into which the poison is the ducts of the glandular struc it is secreted, and which is lo present the parotid gland of th tebrata. The poisonous fluid odorous, tasteless, and of a ye It is secreted in greater quan qualities are more virulent in s ature than in cold. . . . When inflicts the wound, the pressure forces a small drop of the poi the tube; it passes through orifice, which is situated on the of the curved tooth, and is in slit. The manner in which the flicted is as follows. The anim throws itself in the first place more or less close, and the ant the body is raised. The neck abruptly backwards, and

re erected tooth struck into it, and with
e velocity of thought. It is found by ex-
riment that the effect of subsequent wounds
greatly diminished either by the diminu-
on of the quantity of venom, or by some
eterioration of its strength; so that if a
noxious Serpent be made repeatedly to
flict wounds, without allowing sufficiently
ng intervals for it to recover its powers,
ch successive bite becomes less and less
fective."

The Viper, like many other of the poison-
s groups of Serpents, is ovo-viviparous.
f a female Viper about to bring forth her
oung be killed, and the young ones set at
berty by opening the abdomen, they will
mediately crawl about, and on being ir-
tated will throw themselves into an atti-
de of defence. The number of young
roduced at each birth varies from about
elve to twenty. During the cold months
f the year the Viper, like the other *reptilia*,
eeks a secure retreat in which to hibernate.
arrows, field-mice, and other small animals
re the Viper's food. There are two or three
arieties, as the Red Viper, the Black Viper,
c.

VIRGULARIA. A genus of Coralliferous
olypi, closely allied to the genus Pennatula,
at having the laminæ between which the
olypi are situated much shorter. Like that

VIRGULARIA MIRABILIS.

enus, one extremity of it is always without
olypi, and somewhat resembles the barrel
f a feather. It is believed to be phospho-
escent, like many of the other allied genera.
or figure shows, better than a description,
he form of this singularly beautiful genus.

VITRINA. A genus of small land shells,
vate, thin, glossy, and fragile; spire short,
he last whorl large; aperture oval. The
ody of the animal is long, with four ten-
acula, two of which have eyes at the summit.
The species are all recent, and found among
ves and grass in damp situations. They
trongly resemble young specimens of the
enus *Helix*, from which they are distin-
uished by their never being umbilicated
r perforated.

VIVERRA; VIVERRIDÆ. A genus
nd family of carnivorous quadrupeds,
which in the *Linnean arrangement* included
besides the true Civets, to which the genus
Viverra is now restricted) various animals
differing remarkably in form, in structure,
and in habits; as ichneumons, coatimondis,
genets, weasels, &c. The true Civets, as Mr.
Bennett, in his 'Tower Menagerie,' observes,
yield in the extent of their carnivorous pro-
pensities to the cats alone, whom they ap-
proach very closely in many points of their
zoological character, as well as in their pre-
datory, sanguinary, and nocturnal habits. In
addition to the six incisors and two canines
which are common to the whole of the true
Carnivora, they have on each side and in
each jaw six molars, one of which is pecu-
liarly adapted for lacerating flesh, while the
rest are more or less of the ordinary form.
Their tongues are furnished with the same
elevated and pointed papillæ which give so
remarkable an asperity to those of the cats,
and their claws are half retractile. The
toes are five in number on each of their feet,
and their extremities alone are applied to
the ground in walking; the animals are
consequently completely digitigrade. But
the most distinctive character of the group
consists in an opening near the tail, leading
into a double cavity of considerable size, fur-
nished with glands and follicles for the se-
cretion of the peculiar odoriferous substance
so well known as the produce of the Civet,
and from which the animal derives its name.
[See CIVET.]

VIZCACHA. [See BIZCACHA.]

VOLUTA; VOLUTIDÆ. A genus and
family of testaceous gasteropodous Mollusca,
principally found in tropical seas, and whose
shells are prized above most others for their
beauty and rarity. The animals inhabiting
them have the head distinct, and two short
triangular tentacula, with eyes at the base,
and a long thick proboscis or trunk; foot
very large. The *Volutidæ* comprise nume-
rous species, both recent and fossil, and may
be regarded as one of the most interesting
and beautiful families of the spiral *Testacea*,
whether in regard to the elegance of the
shells themselves, or as exhibiting a principle
of variation in their structure hardly to be
excelled. They are generally smooth, shin-
ing, and the colours bright and varied; they
differ exceedingly in form and size, some
being globular, others oval, some turreted,
and others with only a very small spire; but
though they vary in the figure of the shell
and of the aperture, they are recognized by
the emargination without a canal which ter-
minates it, and by the oblique plaits of the
columella. Some of them have spines at
the upper part of each whorl, which form a
kind of thorny crown; many are curiously
marked with lines and spots, so as to form
some resemblance to a line of printed music;
and one very scarce species is marked with
five or six transverse milk-white bands upon
a dark ground, and spotted with reddish
brown, forming a beautiful contrast of co-
lours. Many of them attain a very large
size; but the fossil species are generally
smaller than the recent.

VOLVARIA. A genus of Univalve
Mollusca, found on the coasts of Africa and

the rick-yard, and the granary are highly injurious to the agriculturist. This little creature is of a reddish-brown colour, mixed with grey, on its upper parts, and ash-colour beneath; feet and tail dusky. Length of the head and body, four inches; tail about one inch and a quarter. The head is large; muzzle very obtuse; the body thick; the tail not more than one-third the length of the body, sparingly covered with hair. The female forms her nest of dried grass, and produces six or seven young at a time. The nature of the Field Vole's food is decidedly vegetable, as we might indeed infer from the following interesting facts, related by Mr. Jesse in the first series of his 'Gleanings:'—"An extraordinary instance of the rapid increase of Mice, and of the injury they sometimes do, occurred a few years ago in the new plantations made by order of the Crown in Dean Forest, Gloucestershire, and in the New Forest, Hampshire. Soon after the formation of these plantations, a sudden and rapid increase of Mice took place in them, which threatened destruction to the whole of the young plants. Vast numbers of these were killed; the Mice having eaten through the roots of five-year-old oaks and chestnuts, generally just below the surface of the ground. Hollies also, which were five or six feet high, were barked round the bottom; and in some instances the Mice had crawled up the tree, and were seen feeding on the bark of the upper branches. In the reports made to Government on the subject, it appeared that the roots had been eaten through wherever they obstructed the runs of the Mice. Various plans were devised for their destruction; traps were set, poison laid, and cats turned out; but nothing appeared to lessen their number. It was at last suggested, that if holes were dug, into which the Mice might be enticed or fall, their destruction might be effected." Holes, it appears, were accordingly made in Dean Forest, about twenty yards asunder, and from eighteen to twenty inches in depth, hollowed out much wider at bottom than at

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The Griffo
This bird inh

a lodgment upon its prey. It rarely quits the banquet while a morsel of flesh remains, so that it is not uncommon to see it perched

GRIFFON VULTURE.—(VULTUR FULVUS.)

upon a putrefying body for several successive days. It never attempts to carry off a portion even to satisfy its young, but feeds them by disgorging the half-digested morsel from its maw.

The Sociable Vulture. (*Vultur auricularis.*) This is a gigantic species, inhabiting the greater part of Africa, and said by some naturalists to be also found in Greece. Its head and greater portion of the neck are red and naked, the folds of red naked skin originating behind the ears, and surrounding the upper part of them: the throat is covered with blackish hairs, and the lower and back part of the neck clothed with a ruff of blackish curling feathers. The plumage of the

SOCIABLE VULTURE.
(VULTUR AURICULARIS.)

body, wings, and tail are of a blackish-brown colour, rather lighter beneath than above; feathers of the breast, belly, and sides beneath, narrow, long, pointed, projecting from the body so as to discover the nearly pure white down which *everywhere closely* covers it, *and extends beyond the feathers* on the lower and anterior parts of the neck. Legs brownish; claws light brown. In size the Sociable Vulture is equal to the Condor, measuring upwards of ten feet across the wings expanded. The nest is built in the fissures of rocks, and the female generally lays two, sometimes three eggs. During the period of incubation the male keeps watch at the entrance of the cave.

It has been observed of this gigantic species, that it is "a fit machine for assisting in the clearance of the soil of Africa from the putrid bodies of elephants, hippopotami, rhinoceroses, and giraffes, that it haunts the caverns of rocks, and is altogether a mountain bird. There its night is passed, and there, among the lofty crags, it retires to repose when it has sated its appetite. Le Vaillant saw large flocks of them perched at sunrise on the precipitous entrances to their abodes, and sometimes the extent of the rocky region was marked by a continued chain of these birds. Their tails are worn down by friction against their craggy haunts and by the soil of the plains, in consequence of the laborious efforts which they make to raise themselves into the air: when once on the wing, however, their flight is grand and powerful. They rise higher and higher, till their enormous bulk is lost to human ken; but though beyond the sphere of man's vision, the telescopic eye of the bird is at work. The moment any animal sinks to the earth in death, the imperceptible Vulture detects it. Does the hunter bring down some large quadruped beyond his powers to remove, and leave it to obtain assistance?—on his return, however speedy, he finds it surrounded by a band of Vultures, where not one was to be seen a quarter of an hour before."

The Egyptian Vulture. (*Neophron percnopterus.*) The Egyptian Neophron, which has also been denominated Pharaoh's Chicken, is the smallest of the Vulture tribe; its natural habitation, the shores of the Mediterranean Sea. The adult has the front of the head, the upper part of the throat and cere naked, and of a bright yellow. The plumage is altogether of a pure white, with the exception of the quill feathers, which are black; legs, feet, and base of the bill yellow; point of the bill, black. There is scarcely any difference in the colouring and plumage in the adults of both sexes. The young of the year are of a deep brown, slightly spotted with lighter brown and white, and do not attain their adult plumage for two or three years.

In our description of the Bearded Vulture we entered rather fully on the often-discussed question of the very acute sense of smelling which has been attributed to birds of the Vulture tribe. Before we quit the subject, it may be proper to mention that Audubon, in his 'Birds of America,' insists on it that it is the organs of sight, and not those of smelling, that enables Vultures and other birds of prey to discover carcases at such immense distances as they are said to do. We quote from him the following passage: "We were led to call in question the

accuracy of this opinion, on recollecting the observations of some travellers, who have remarked birds of prey directing their course towards dead animals floating in the rivers in India, where the wind blows steadily from one point in the compass for many months in succession. It is not easy to conceive that the effluvia from a dead carcase in the water should proceed in direct opposition to the current of air, and affect the olfactory nerves of birds at so many miles distant." In order to satisfy himself on this point, Audubon made several experiments, one of which was as follows. Having stuffed and dried the skin of a deer, he retired from it: a Vulture soon approached, attacked its eyes, which were made of painted clay, then walked to the other extremity, tore some of the stitches, until much of the fodder and hay with which it was stuffed was pulled out, and after reiterated attempts to discover flesh, took flight. Afterwards, he had a large dead hog put into a ravine and concealed in the briars; he saw many Vultures pass over it, but some approached it, although several dogs had made a meal on it. He then tried to approach it himself, but found the stench too intolerable. This species has great power of wing, and specimens have sometimes been killed in the British Isles.

The BLACK VULTURE or GALLINAGO. (*Cathartes atratus.*) In our article Turkey Buzzard we have described a species closely allied to this in appearance and habits. We introduce this species as a well-marked form of the family Vulturidæ. It is a native of the United States, and is found in South America, as Darwin informs us, as far south as Lat. 41°. It prefers a humid climate, or

BLACK VULTURE.—(CATHARTES ATRATUS.)

rather the neighbourhood of fresh water, and in Peru is protected as a scavenger. These Vultures may be called gregarious, and, as Darwin observes, are not solely brought together by the attraction of a common prey, but seem to have pleasure in society. He has observed a flock of them on a fine day at a great height, each bird wheeling round and round without closing its wings, in the most graceful evolutions. It is clearly done for sport-sake, or may be connected with their matrimonial alliances.

For *King Vulture*, see SARCORAMPHUS.
For *Bearded Vulture*, see GYPAETUS.

For *Turkey Vulture* and *John Crow* see TURKEY BUZZARD.

WAGTAIL. The species of W which are few, are chiefly confin European continent, where the in are numerous. Bewick remarks almost all languages the name of is descriptive of its peculiar habits. Motacilla; in French, Motteux, La dière, or Washer; in England they times called Washers, from their motion; in German their name Brook-stilte; and in Italian, Sha &c. They are easily distinguished brisk and lively motions, as well great length of their tails, which t up and down incessantly, from w cumstance they derive their name do not hop, but run along the gro nimbly after flies and other insects, they feed; they likewise feed on sma in search of which they frequent round the ploughman, and follow t in search of the flies which genera round them. Their flight is weak dulating, during which they make a ing noise; and they seldom perch. species do not differ in their habits, not very dissimilar in appearance, i sufficient that we describe the one m mon with us, viz. —

The PIED WAGTAIL, or BLA WHITE WATER WAGTAIL. (*M alba.*) Its length is about seven the bill is black; eyes hazel; hin of the head and neck black; f cheeks, and sides of the neck wh fore part of the neck and part of th are black, bordered by a whitish lin

PIED WAGTAIL.—(MOTACILLA A

ing a gorget; the back and rump ash; wing-coverts and secondari dusky, edged with light gray; prim black, with pale edges; lower par breast and belly white; the middle of the tail are black; the outermos except at the base and tips of the bas which are black; legs black. The are to be seen wherever there are springs and running waters. The their nest on the ground, of dry gra soft small roots, lined with hair and f the female lays five white eggs, spot brown, and both parents sometimes

and train their young for three or four weeks after they are able to fly. As the winter approaches they migrate from north to south.

WAINSCOT [MOTHS]. A name given by collectors to different species of Moths, of the genera *Nonagria* and *Leucania*.

WALKING-LEAF. [See PHYLLIUM.]

WALRUS or MORSE. (*Trichecus.*) A genus of the *Phocidæ* or Seal family, though differing greatly from them in the cranium and the teeth. The head is well proportioned, round, obtuse, eyes small and brilliant, upper lip remarkably thick, covered with large pellucid whiskers or bristles. Nostrils large, rounded, placed on the upper part of the snout; no external ears. In the adult lower jaw there are neither incisors nor canines, and the lower jaw itself is compressed anteriorly so as to fit between the two enormous tusks (canines) of the upper jaw, which are directed downwards, and are sometimes two feet long.

SKULL AND HEAD OF WALRUS.

WALRUS OR MORSE.
(TRICHECUS ROSMARUS.)

The great alveoli, or sockets for containing these formidable teeth, produce the characteristic form of the skull of the Walrus, and make the anterior part of the upper jaw present an immense convex muzzle, the nostrils having an upward direction, and not terminating at the snout. It is evident that there is a general resemblance between the organization of the Walrus and that of the Seal; but the development of the brain is not so great in the former as it is in the latter, and the Walrus appears to be gifted with less intelligence.

It is the opinion of most naturalists that Walruses feed on shell-fish and marine vegetables which adhere to the bottom of the sea, and that one of the uses of their tusks is to root up their food from the spot to which it is fixed; and the probability is, that though the Walrus does not abstain entirely from carnivorous habits, marine plants form the bulk of its food. They swim rapidly, but their progress on land is awkward and tedious. They appear to be monogamous, and the female is said to bring forth her young, one only at a birth, either on shore or on the ice. The flesh is highly valued by the inhabitants of the arctic regions, and our own northern voyagers have often found it a most acceptable repast. According to Professor Macgillivray a small specimen was shot on the East coast of Harris, one of the Western Isles, December 1817. It was formerly abundant in the Norwegian seas, but is now driven further north.

WANDEROO MONKEY. (*Macacus Silenus.*) A fine species of monkey, native of Ceylon, which is of a deep black colour, excepting the long hairs about the head, which are more or less of an ash colour, and sometimes almost white. This mane, as it may be called, descends on each side of the face like a ruff. The tail ends in a brush of tufted hair. It is occasionally brought to this country, but is by no means common in a state of confinement. Father Maria has given the following account, which we quote from Mr. Bennett. "There are found four sorts of monkeys on the coast of Malabar; the

WANDEROO MONKEY. — (MACACUS SILENUS.)

first is quite black, with glossy hair and a white beard round the chin measuring rather more than a palm in length. The other monkeys pay to this so profound a respect that they are humble in his presence, as though they appreciated his superiority. The princes and mighty lords hold him in much estimation for his endowments of gravity, capacity, and the appearance of wisdom above every other monkey. He is readily trained to enact a variety of ceremonies and affected courtesies, which he goes through with so grave a face, and so perfectly, that it is a most wonderful thing to see them so exactly performed by an irrational creature." We need hardly add that this monkey is not

most gigantic of the deer tribe, frequently growing to the height of our tallest oxen, and possessing great activity as well as strength. His horns, which he sheds annually, are very large, branching in serpentine curves, and measuring, from tip to tip, upwards of six feet. Most of the upper parts of the Wapiti

WAPITI DEER.
(CERVUS CANADENSIS.)

are of a lively yellowish brown colour; the neck, mixed red and black, with coarse black hairs descending from it like a dewlap; from the shoulders to the hips French gray; a pale yellowish patch on the buttocks, bounded on the thighs by a black line. They are considered more stupid than the rest of the deer kind; and they frequently make a shrill quivering noise, which is "not very unlike the braying of an ass." The flesh is coarse, and but little prized by the natives;

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of plants and roots, is generally securely placed in the middle of a furze-bush, not far from the ground. Eggs greenish white, speckled with brown.

The ORANGE-CROWNED WARBLER. This is one of the American Warblers, of which there are numerous species, but none of them much distinguished as vocalists. It is five inches long and seven in extent. The general plumage above is dull greenish olive, the rump and tail coverts being bright yellowish olive. The head is slightly crested, the feathers of the crest are orange at base, constituting a spot on the crown, visible only when they are elevated, being tipped with the common colour. The whole bird beneath is dull olive yellow; the inferior tail-coverts pure yellow. The tail is even, the feathers being dark brown, edged with olive green on the outer, and with white on the inner web. The manners of the orange-crowned Warbler resemble those of the kindred species, though, as Wilson observes, they have a remarkable habit of inflecting the tail.

Among the *Australian Warblers*, we select one described by Mr. Gould, in his magnificent work, as the WHITE-FRONTED EPTHIANURA (*Epthianura albifrons*). It is described as a most active and sprightly little bird, particularly the male. It gives a decided preference to spots of a sterile character, and is in the habit of frequently perching on the summit of a stone, or on the extremity of a dead and leafless branch. It is rather shy in its disposition, and when disturbed flies off with considerable rapidity to a distance of two or three hundred yards before it alights again. The forehead, face, throat, and all the under surface of the male is pure white; occiput black; chest crossed by a broad crescent of deep black, the points of which run up the sides of the neck, and join the black of the occiput; upper surface dark gray with a patch of dark brown in the centre of each feather; wings dark brown; upper tail-coverts black; two centre tail-feathers dark brown, the remainder dark brown, with a large oblong patch of white on the inner web at the tip: bill and feet black.

WART-HOG. [See PHACOCHÆRUS.]

WASP. A name given to many Hymenopterous insects, but more properly applied to the species of the genus *Vespa*. Under the article VESPIDÆ we have described the habits, &c. of the family of Hymenopterous insects which compose it, namely, Wasps and Hornets. We shall therefore in this place introduce the genus *Pelopœus*, or DIRT-DAUBERS, which by accident was omitted in its proper place. These curious insects belong to the *Sphegidæ* family. For the interesting particulars respecting them the public are indebted to the pages of the *Zoologist* for 1844, the following account having been communicated to it by P. H. Gosse, Esq.—"One of the many things that struck my attention on first going into the Southern United States, was, in most of the *farm-houses, lumps* of yellowish *mud stuck on the walls* and rafters, and particularly the large projecting chimneys. Some of these were of irregular shape, nearly as large as one's fist, and others were cylindrical, as thick as one's thumb, and three or four inches long. The little boys (and boys in the back-woods know a good deal about natural history) informed me that these were the nests of the Dirt-daubers: and on taking down one of the shapeless lumps, which had been fixed right over my bed, and carefully opening it, I found within, many long-oval cells lined with a thin coat of brittle shelly substance. These were arranged side by side, in two rows: each contained the slough of a perfected insect. In a much smaller nest I found but one cell, and no exuviæ, but six spiders, all dried. The long thimble-like nests were divided into cells, in a single series, by transverse partitions of mud. The children soon showed me the insects to which the nests belonged, although, as the season was spring, they were not then building. By and by, in the summer, I cultivated an acquaintance with these funny little architects, and had opportunities of watching the whole process of building; and thus of setting at rest, to my own satisfaction, the disputed point of ownership to these nests, which some entomologists have attributed to Eumenes, supposing the Pelopœus to be parasitical. The following observations will show that sometimes, at least, the latter builds. I transcribe now from my journal.

"*June* 20.—I watched with much interest the proceedings of a Dauber, in building her mud cells: it is a pretty species, *Pelopœus flavipes*. She has chosen the ceiling of a cupboard in my sitting-room, where, previously to my observing her, she had made one cell, and half another parallel to it; the former was closed, the latter had got its contents of spiders and only wanted closing. Such was the *statu quo*. I had not seen the Dauber go in for some time, so that when she did go in, I watched her from her recommencement. She came empty, and having for some moments peeped in, and examined the contents to see that all was right, she suddenly flew out at the door (which as well as the window was almost constantly open), and returned in about a minute with a lump of soft wet mud in her jaws, about twice as large as her head. Where she got it in so short a time, I don't know; it was perfectly kneaded, and free from all lumps, or grit, and was worked, when laid on, as freely as butter. I suspect that it was formed of dry dust, on which she had poured a drop of fluid from her mouth. She laid the substance on the open end of the unfinished cell, and spread it about with her jaws very expeditiously and skilfully, till the orifice was quite closed up. She then flew off, and returned with a similar load, which she applied upon the last to make it thicker. When she was gone the third time, to observe her behaviour, I thrust the head of a pin through the newly laid mortar, opening a hole into the cell. On her return, she at once perceived the hole, and deposited her lump upon it, spreading it about as before. I played her the same trick several times, at all of

which her proceedings were the same, save that at length she seemed to become very angry, and endeavoured to catch the house-flies that were flying and crawling near. I have no doubt that she suspected them of having a hand in it. At all events, she jumped at them very snappishly whenever they came near, and sometimes even with the load in her mouth, but I did not see that she caught one. Once too, a large Ichneumon was lurking about, at whom she fiercely flew, and I think they had a short struggle. At times she would linger at a little distance after depositing her load, apparently hoping to catch the insidious housebreaker, 'in the manner,' as lawyers say.

"At length I broke off a large piece from the side and bottom, exposing the spiders to view; this, however, she speedily built up as before, at two or three loads, adding to the standing part all round the hole, and not at one side only. After this I did not put her industry to the task any more, but suffered her to finish her work, which she did by adding another layer or two to the end. I, however, made a hole in the first cell, which was quite hard and dry, to see if she would observe it, which she did at once, and clapped her load of mortar on it. I noticed, that while working, though the wings were closed incumbently, she kept up a shrill buzz, like that of a bee when held in the fingers: her antennæ, which were usually carried nearly straight, were, during the plastering, curled up, and continually vibrating, and moving on the surface of the work, evidently trying it by touch, which I could not see without rejecting the theory that calls the antennæ 'ears.' In seeking her materials, she was gone never more, often less, than a minute, and always brought a similar lump in appearance, which was invariably carried in the jaws, without any aid from the feet.

"*July* 1.—The Dauber built another cell to-day, on the other side of the first, which is now therefore in the middle. I again pestered her, by sticking a small tin tack in the newly laid mud, just where she would have to deposit the next load. When she came she appeared quite 'bothered;' she ran backward and forward, and round and round, over the cells for some time, with the mud in her jaws, as if at a loss what to do in so novel an exigency. It was a different case from the former; a hole could be stopped up, but here was an intruding substance just where she wanted to deposit; should she lay it on, the incumbrance would be more firmly imbedded; should she place it elsewhere, it would be wasted, not being needed, or perhaps be positively injurious; should she attempt to remove the evil, her mouth was occupied, and she was unwilling to lose her burden. At length, however, as the least of the evils, she seized the tack with her jaws and drew it out, dropping her mud in the effort. When away the next time, I bundled up a worsted thread, and pressed it on the soft work, which presented a still more serious obstacle, as she could seize only a small part of it which would yield without coming away; however, by taking hold of several parts successively, and tugging at them a long time, and by walking round and round with it in her mouth, she at length got it out. These instances of sagacity and perseverance greatly pleased me. After laying on a load, she always cleans her antennæ with her fore-feet, and her feet with her jaws: on arriving she never alights at the nest, but always on the inside of the cupboard-front, and crawls along the ceiling to it.

"*Aug.* 6.—I pulled down the nest of the yellow-footed Dauber, to which other cells had been added in succession after the last record. On examining them now, I find three perfected insects have made their exit, one has died in making its way out, two are in pupa, one black and near perfection, the other white and nearly turned, and two are in larva, one large, the other very small, making eight originally in the nest. Many of the spiders remained uneaten, most of them were handsomely studded with scarlet spots on a black ground. It was in looking at these pupæ that I first was aware how a difficulty of no ordinary magnitude was got over. How do insects, whose abdomen is peduncled, draw it out of the pupa skin, seeing the peduncle is so slender? I should have guessed that the skin would be ruptured, but it is not so. These Daubers have a very long and slender peduncle, but the skin of the pupa, close in every other part, is as wide around the peduncle as around the abdomen, stretching across from the thorax to the summit of the abdomen, like a loose garment. What a beautiful example of Divine foresight in creation!"

WATER-HEN. [See GALLINULE.]

WATER-OUZEL. [See OUZEL.]

WATER-SNAKE. [See HYDROPHIS.]

WATTLE-BIRD. [See TALEGALLA.]

WAVE [MOTHS]. A name given by collectors to different species of Moths, of the genera *Ptychopoda*, *Emmelesia*, *Cabera*, &c.

WAXWING. (*Bombycilla.*) We learn from Bonaparte's supplement to Wilson's entertaining 'American Ornithology,' that the Waxwings, "having no other representative in Europe or North America are easily recognized by their short turgid bill, trigonal at base, somewhat compressed and curved at tip, where both mandibles are strongly notched; their short feet, and rather long subacute wings. But their most curious trait consists in the small, flat, oblong appendages, resembling in colour and substance red sealing-wax, found at the tips of the secondaries in the adult. These appendages are merely the coloured corneous prolongation of the shafts beyond the webs of the feathers." "The Waxwings," he adds, "live in numerous flocks, keeping by pairs only in the breeding season; and so social is their disposition, that, as soon as the young are ably to fly, they collect in large bands from the whole neighbourhood. They perform extensive journeys, and are great and irregular wanderers. Far from being shy, they are [illegible]

erally soon die in confinement. Their insists chiefly of juicy fruits, on which itten, but to the great detriment of the d, where they commit extensive ra- When fruits are scarce they seize upon , catching them dexterously in the manner as their distant relatives the chers. No name could be more in- riate for these birds than that of rers, as there are few less noisy, and night even be called mute with much reason. They build in trees, and lay n a year, about five eggs."

BOHEMIAN WAXWING. (*Bombycilla a.*) "Whence," exclaims C. Bonaparte, the Bohemian Waxwing come at the nd irregular periods of its migrations? er does it retire to pass its existence ive birth to its progeny? These are stances involved in darkness, and it has not been given to any naturalist ertain. It has been stated, and with appearance of probability, that these retire during summer within the arctic ; but the fact is otherwise, naturalists have explored these regions asserting ey are rarer and more accidental there n temperate climates. It seems pro- that their chief place of abode is in iental parts of the old continent, and, may hazard an opinion, we should not prised if the extensive and elevated land of Central Asia was found to be principal rendezvous, whence, like the s in former times, they make their lar excursions."

eems that in Northern Russia, and the ne north of Norway, they are seen in numbers every winter; and, notwith- ng they at times invade peculiar dis- in vast numbers, so remarkable was appearance in former times considered, hey have alarmed whole regions, and looked upon as the precursors of war, nce, and other public calamities. "In Gesner informs us, they appeared along hine, near Mentz in Germany, in such ers as to obscure the sun. They have, er, of late years, in Italy and Germany, France especially, at all times, been nely rare, being seen only in small nies or singly, appearing as if they trayed from their way. In England, ohemian Waxwing has always been visitant, coming only at long and un- n intervals. In the winter of 1810 large were dispersed through various parts t kingdom, from which period we do nd it recorded by English writers till onth of February, 1822, when a few under Mr. Selby's inspection, and l were again observed during the se- horn in the winter of 1823. Upon the ent, its returns are subject to similar laimty. In M. Necker's very interesting is lately published on the Birds of s, we read, that from the beginning of entury only two considerable flights been observed in that canton, one in ry, 1807, and the other in *January*, hom *they were very numerous*, and *the winter there*, all departing in March. In 1807 they were dispersed over a great portion of western Europe, and were seen near Edinburgh in the first days of that year."

WEASELS. A genus of digitigrade Carnivora, belonging to the *Mustelidæ* family, many of which are described in this volume under their several well-known names, as MARTEN, ERMINE, &c. We shall therefore now only give the COMMON WEASEL (*Mustela vulgaris*), a species which inhabits many countries of Europe, and, in much greater abundance, North America. In Mr. Bell's excellent work on the British Quadrupeds, he makes the following accurate remarks on the resemblance that exists between the Weasel and the Stoat: "The Stoat is brown above, dirty white beneath; the tail always black at the tip, longer and more bushy than that of the Weasel, and the former animal is twice as large as its elegant little congener. The Weasel, on the other hand, is red above, pure white beneath; the tail red and uniform. Their habits also, though generally similar, are, in many of their details, considerably distinct, and we are fully borne out by observation in saying that the accusations against the Weasel, of the mischief which he is said to perpetrate in the farmyard and the hen-roost, as well as amongst game of every description — on hares and rabbits, no less than on the feathered tribes — are principally due to the Stoat. It is not meant to be asserted that the Weasel will not, when driven by hunger, boldly attack the stock of the poultry-yard, or occasionally make free with a young rabbit or a sleeping partridge; but that its usual prey is of a much more ignoble character is proved by daily observation. Mice of every description, the field and the water-vole, rats, moles, and small birds, are their ordinary food; and from the report of unprejudiced observers, it would appear that this pretty animal ought rather to be fostered as a destroyer

COMMON WEASEL.—(MUSTELA VULGARIS.)

of vermin, than extirpated as a noxious depredator. Above all, it should not be molested in barns, ricks, or granaries, in which situations it is of great service in destroying the colonies of mice which infest them. Those only who have witnessed the multitudinous numbers in which these little pests are found, in wheat-ricks especially, and have seen the manner in which the interior is sometimes drilled, as it were, in every direction by their runs, can at all appreciate the amount of their depredations; and surely the occasional abduction of a chicken or a duckling, supposing it to be much more frequently chargeable against the Weasel than

lodged in some snug locality, as a dry ditch, the hollow of a tree, &c. It produces four or five young at a birth, and generally has two or three litters in the year.

WEAVER. (*Ploceus.*) The Weavers, of which there are several species, belong to the *Fringillidæ*, have a conical beak, more or less stout at its base, and the upper mandible slightly bulging. These birds are found in both continents, and the greater number of those of the eastern hemisphere are remarkably skilful nest-builders, in which they interweave blades of grass, from which circumstance they derive their name. They generally build their nests independently of each other, as the Philippine Weaver-bird, whose spherical pensile nest is entered by a vertical canal, which communicates with a lateral opening of the cavity wherein the eggs are deposited; but some of them build a vast number of contiguous nests, which form a single mass divided into numerous compartments.

WEEVER. (*Trachinus.*) There are two Acanthopterygious fishes of this name, not uncommon in the British Seas: the GREAT and the LESSER WEEVER, but the last-mentioned is the one most frequently met with on different parts of our coast. It is seldom more than five or six inches long; the GREAT WEEVER or STING BULL is, however, double that length. Their most dis-

COMMON WEEVER.—(TRACHINUS DRACO.)

tinguishing characteristic is the power they have of inflicting wounds by means of their spinous fins; and fishermen almost invariably cut off the first dorsal fin, and both

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they have warm blood, a complete double circulation; they breathe the atmosphere by means of true lungs; and their reproduction and the nourishment of their offspring associate them with the true mammiferous type."

Mr. Bell then proceeds to say, that "the general form of the Cetacea is similar to that of fishes, in the horizontal elongation of the body, the rounded and smooth surface, the gradual attenuation of the extremities of the trunk, and the development of fins and especially of the tail as means of progression. The arrangement of the bones composing the anterior limb is one of the most important and curious parts of this subject. The whole of the fin consists of exactly the same elements as those which compose the arm and hand of man; but so concealed underneath the thick skin which envelopes it, that not a trace of these bones is to be seen externally. In this respect an intermediate structure is exhibited by the anterior extremities in the Seals."

"The posterior extremity is, in the whole order, either absolutely wanting, or merely rudimentary. In the latter case, its only vestige consists of certain small bones, the imperfect representative of a pelvis, suspended, as it were, in the flesh, and having no connexion with the spinal column. In this respect a striking difference is observed between these animals and the Seals: in the latter, the posterior extremities are carried backwards, and perform the office of a true caudal fin; but in the Whales, this most important organ of progression consists of an extremely broad and powerful horizontal disc, varying in figure in the different genera, but in all constituting the principal instrument of locomotion. This extraordinary organ is not placed vertically as in fishes, but horizontally; and the admirable adaptation of such a peculiarity in its position to the requirements of the animal forms a fresh and beautiful illustration of the perfection of Creative Wisdom. The fishes, respiring only the air contained in the dense medium in which they live, do not require any access to the atmosphere; and their progression therefore is principally confined to the same place: but the Whales, breathing the atmosphere, are necessitated to come to the surface for each respiration, and hence require an one of inconceivable power, the position of which applies its impulse in a vertical direction, so as to impel their ponderous bodies from the lowest depths of the ocean to the surface, every time the lungs require to be replenished with fresh air. The greatest rapidity of motion is produced by alternate strokes of the tail against the water, upwards and downwards; but their more ordinary progression is effected by an oblique lateral and downward impulse, first on one side and then on the other, as a boat is impelled forwards by a single oar in the act of sculling. The extent of the tail in some of the larger species is enormous; its superficies being no less than about a hundred square feet, and its breadth considerably *upwards* of twenty feet."

The respiration of these animals is another important part of their physiology. It appears that often, when the blow-holes are far out of the water, a jet of water of considerable size is thrown up with great force and to a considerable height;—a circumstance which can only be accounted for by supposing that the water taken into the mouth, and carried back into the pharynx, is then regurgitated by the blow-holes. "Let us suppose," says Cuvier, "the Cetacea to have taken into its mouth some water which it wishes to eject. It moves its tongue and jaws as if it were about to swallow it; but, closing the pharynx, it forces the water to mount into the nasal passages, where its progress is accelerated by annular muscular fibres, until it raises the valve (between the nasal passage and two pouches or reservoirs) and distends the membranous pouches above. The water once received into these pouches can be retained there until the animal wishes to spout. For that purpose it closes the valve to prevent the descent of the water again into the nasal passages below; and forcibly compresses the pouches by means of the fleshy expansions which cover them: thus compelled to escape by the narrow crescentic aperture or blow-hole, it is projected to a height corresponding with the force of the pressure."

With the unflinching firmness of a master mind, relying upon philosophical principles, and not yielding to popular prejudice by calling that a fish which he knew to be a mammiferous animal, Linnæus separated these cetaceans from the fishes, and associated them with the mammalia, on account of their warm bilocular heart, their lungs, their movable eyelids, their viviparous generation, the teats by means of which they suckle their young, and the other details of their anatomy which he, Cuvier, and all succeeding naturalists of note, allow to sufficiently distinguish them.

The Cetaceans are divided by Cuvier into two great tribes or families, one of which he terms *Herbivorous Cetacea;* the other, *Ordinary Cetacea.* And M. F. Cuvier thus arranges the order: Tribe 1. PHYTOPHAGA. These are characterized by having teeth of different kinds; the *molars* with flattened crowns, corresponding to the vegetable nature of their food. *Mammæ* two, pectoral. *Lips* provided with stiff bristles. *External nostrils* two, situated at the extremity or upper part of the rostrum, which is obtuse. Genera: *Manatus*, Cuv.; *Halicore*, Cuv.; *Rytina*, Ill. Tribe 2. ZOOPHAGA. Teeth of one kind or wanting, not adapted for mastication. *Mammæ* two, pudendal. *External nostrils* double or single, situated on the top of the head. And he further divides them into—1. *Those which have the head of moderate size:* family *Delphinidæ;* characterized by having teeth in both jaws, all of simple structure, and, generally, conical form: and—2. *Those with the head of immoderate size, equalling one-third the length of the body:* forming two families, 1. *Catodontidæ;* with numerous conical teeth in the lower jaw, and blow-holes confluent. 2. *Balænidæ;* which have no teeth, but their place supplied by the plates of baleen or whale-

bone attached to the upper jaw: *blow-holes distinct*.

The following simple and natural arrangement is by Mr. J. E. Gray. He describes the Whales (*Cete*) as the third order of *Mammalia*, stating that they are peculiar for their fish-shaped, nearly bald body; that their hinder limbs are united, forming an horizontal tail; and that they have simply conical rootless teeth or whalebone in the jaws. — The family of the Whales (*Balænidæ*), he observes, have a very large head, at least one-third the length of the body, as the tribe of Whales (*Balænina*), which have whalebones in the jaws, and the Catodons or *Physeterina*, which have simple conical teeth, as the Spermaceti Whale (*Catodonta*) and Cachalot (*Physeter*). — The family of Porpoises (*Delphinidæ*), which have a moderate or small head and an elongated or smooth body, as the Dolphins (*Delphinina*), which have conical jaws and teeth, the Porpoises (*Phocœna*), which have a shorter head and compressed teeth, the *Hyperoodons*, which only have a few teeth, — all these, Mr. Gray observes, have tapering front limbs, while the Susuk (*Platanista*) has triangular truncated limbs, an elongated beak with compressed teeth, and the bones of the skull bent over the forehead, so as to form an arched cavity. — In the other families, Mr. Gray remarks, the skin is more or less horny, and the lips always furnished with rigid whiskers; the teeth are flat-topped. The Manatees (*Manatidæ*) have eight grinders in each jaw, and the tail rounded at the end. The Dugongs (*Halicoridæ*) have only three or five grinders in each jaw, and the end of the tail truncated or two-lobed.

The Common, True, or Greenland Whale (*Balæna Mysticetus*), is principally met with in the northern arctic circle, but it is also to be found, in considerable numbers, in many other parts of the world. Although not the largest of the tribe, it is, on many accounts, the most valuable in a commercial point of view, being, like several other genera and species, pursued by man for the sake of oil and other valuable products. Its size is usually, in length, about sixty feet; its greatest circumference from thirty to forty feet. The body is bulky forwards, largest about the middle, and tapers rather suddenly towards the tail. The head

COMMON OR WHALE-BONE WHALE.
(BALÆNA MYSTICETUS.)

is very large, narrow above; very broad, flat, and rounded beneath; it occupies about one-third of the entire length, being about sixteen or twenty feet long, and ten or twelve broad: the lips are five or six feet high; and the upper jaw bends down at the extremity to close the cavity of the mouth. There are no teeth: the lamiæ of whalebone which fill the cavity of the mouth are ranged in two series, consisting of about three hundred in each: the eyes are remarkably small: the external opening of the ears scarcely perceptible: the pectoral fins are of moderate size, and placed about two feet behind the angle of the lips. The tail is of great breadth, semi-lunate on its anterior margin deeply divided in the middle; the posterior outline sinuous, and the termination of the lobes pointed: the anterior and middle parts of the body nearly cylindrical; the posterior part rhomboid, the highest ridge or angle being upwards. General colour blackish gray; the anterior part of the lower jaw, and part of the throat and belly, white.

"The family of the *Balænidæ*," says Mr. Bell, "consisting, as there is now reason to believe, but of two known generic forms, are distinguished by the following generic characters: — Rivalling the *Physeters* in their huge general dimensions, the head is proportionally much smaller, and the whole form less clumsy. They have no teeth in either jaw; but the upper, which is extremely narrow, is furnished with numerous horny laminæ, — the whalebone of commerce, — descending perpendicularly from the palate, and varying in proportional breadth and length in the different species. . . . The

SKULL OF WHALE, WITH THE BALEEN.

whalebone, or baleen, as it has been called, consists of numerous parallel laminæ, each of which is formed of a central coarse fibrous layer lying between two which are compact and externally polished. The external part does not cover the internal to its extreme edge; the latter appears therefore beyond the former, and terminates in a loose fringed or fibrous extremity. The base of each plate of baleen has a conical cavity, covering a pulp which corresponds with it, and which is embedded within the substance of the gum or buccal membrane which covers the palate and upper jaw. The outer compact layers of each baleen plate, which have been described, are continuous with a white horny layer of the gum, which passes on to the surface of each plate; and the pulp appears therefore to be the secreting organ of the internal coarse structure only. The filaments of the fringe are very numerous, and fill up the cavity of the mouth sufficiently to form a most complete and efficient strainer; and as the swallow is extremely small, and being large enough to admit even the smaller fish, and, [illegible]

sequently restricted to very small animals, such a structure is necessary in order to retain the whole of those which are taken into the mouth. The manner in which the food is taken, then, is as follows:—The whole of the seas of the Arctic regions, no less than those of the more southern climates, abound in innumerable shoals of molluscous, radiate, and crustaceous animals, which swarm in such hosts as often to colour the surface of the sea. When a Whale, therefore, is taking its food, the immense mouth being opened, a large number are as it were shovelled up by the great expanse of the lower jaw, and as the mouth is closed the water is regurgitated, and the numerous captives are retained by the apparatus just described. When the number of Whales which are found in the Northern Seas and the immense bulk of each individual are considered, imagination itself must fail to appreciate the countless myriads of small beings which are consumed for the nourishment of these stupendous bodies." [See CLIO.]

But although this baleen, or whalebone, which the Greenland Whale yields in such large quantities, is a product of such value as to render it an object of eager pursuit to those engaged in the Whale Fishery, the principal reward arising from the perilous employment is to be found in the large quantities of oil which are obtained from its thick cutaneous layer of fat, or blubber, as it is usually termed. A Whale sixty feet in length will frequently yield more than twenty tons of pure oil, and some of the pieces of baleen are twelve feet long. It is for these prizes that men willingly expose themselves to the rigours of an Arctic winter, the chance of falling victims to the united effects of cold and hunger, or shipwreck in its most horrid form, occasioned by the irresistible crush of icebergs. And should the hardy mariner escape from dangers such as these, the harpooner not unfrequently perishes from the upsetting of the boat owing to the violent plunges which the wounded animal makes in the water, or the whirlpool produced by his rapidly rushing down into the deep.

Who can read the following passage, which we extract from the able author before quoted, without a feeling of remorse and shame? "The female of this species, like most others of the Cetacea, is extremely attached to her young, and often rushes into the most imminent danger, and even upon certain death, to rescue or defend it. The whalers take advantage of this affectionate attachment, and strike with the harpoon the young Whale, quite sure that the mother will before long approach for the purpose of saving her offspring, but too frequently, in fact, to perish with it!" The Whale has usually but one young one, and brings forth in the early spring; at birth it is about ten or twelve feet long.

THE NORTHERN RORQUAL, or RAZOR-BACKED WHALE. (*Balænoptera physalis.*) This Whale, which is probably the longest of the animal creation, is so named from its having a prominent ridge, or spine, on its back. It is about a hundred feet long, and from thirty to thirty-five feet in circumference; but in proportion to its size, and the difficulty of killing it, its value in oil and whalebone is far less considerable than that of the preceding; and on that account it is not sought after by whalers, and not always attacked when met with. It is less quiet and tranquil in its general movements than the Common Whale, seldom lying motionless on the surface of the water whilst blowing, but making way at the rate of about five miles an hour. When struck, the velocity of its descent is such as very frequently to break the line, of which the Rev. Dr. Scoresby mentions several instances. The food of this enormous animal consists not only of the molluscs and smaller crustacea which constitute the aliment of the *Balæna*, but also of fish of considerable size. One of this species was some years since towed into the harbour of Ostend; and its magnificent skeleton, ninety-five feet in length, was exhibited at Charing-cross (near the King's Mews, the present site of Trafalgar-square). When taken, this specimen of the Whale weighed 249 tons; and 4000 gallons of oil were extracted from the blubber.

THE BROAD-NOSED WHALE (*Balæna musculus*) in many respects much resembles the preceding, except in its never attaining so gigantic a size: its length being from fifty to eighty feet.

The smallest of the Whales is called the BEAKED WHALE (*Balæna rostrata*); its length being about twenty-five feet.

THE SPERM WHALE, or SPERMACETI WHALE (*Physeter macrocephalus*) now demands our attention. Mr. T. Beale, surgeon, to whom we are indebted for a circumstantial account of the natural history of this species, says:—"In length it comes next to the Balæna Physalis, and in bulk, probably, generally exceeds it, and in commercial value, perhaps, equals the Balæna Mysticetus; for although it does not possess the valuable whalebone of this animal, it furnishes us with the beautiful substance spermaceti, and is rich in abundance of the finest oil: it is also the source of the perfume termed ambergris: its length is about eighty feet; circumference about thirty or thirty-five."

SPERMACETI WHALE.
(PHYSETER MACROCEPHALUS.)

No longer ago than in the year 1835 Mr. Beale thus writes:—"On returning to England, after completing an engagement which occupied upwards of two years, in the South Sea Whale Fishery, I was surprised to find, that, when the knowledge of every useful and interesting subject is so widely diffused, so little should be generally known of the natural history of almost the largest inhabitant of our planet, the great Sperm Whale;

the stern magnificence of Arctic scenery; few connect the pursuit of this 'sea beast' with the smiling latitudes of the South Pacific and the Coral Islands of the Torrid Zone; and fewer still have any more distinct conception of the object of this pursuit, than that it is a whale producing the substance called spermaceti, and the animal oil best adapted to the purpose of illumination.

"The head of the Sperm Whale presents, in front, a very thick blunt extremity, called the snout, or nose, and constitutes about one-third of the whole length of the animal; at its junction with the body, is a large protuberance on the back, called by whalers the 'bunch of the neck;' immediately behind this, or at what might be termed the shoulder, is the thickest part of the body, which from this point gradually tapers off to the tail, but it does not become much smaller for about another third of the whole length, when the 'small,' as it is called, or tail commences; and at this point also, on the back, is a large prominence, of a pyramidal form, called the 'hump,' from which a series of smaller processes run half way down the 'small,' or tail, constituting what is called the ridge. The body then contracts so much as to become finally not thicker than the body of a man, and terminates by becoming expanded on the sides into the 'flukes,' or tail, properly speaking. The two 'flukes' constitute a large triangular fin, resembling, in some respects, the tail of fishes, but differing in being placed horizontally; there is a slight notch, or depression, between the flukes posteriorly: they are about 6 or 8 feet in length, and from 12 to 14 in breadth. The chest and belly are narrower than the broadest part of the back, and taper off evenly and beautifully towards the tail, giving what by sailors is termed a clear run: the depth of the head and body is in all parts, except the tail, greater than the width.

"In the right side of the nose and head is a large almost triangular-shaped cavity, called by whalers the 'case,' which is lined

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sary to raise the whole of the anterior flat surface of the nose out of the water; in case the animal should wish to increase its speed to the utmost, the narrow inferior surface which has been before stated, to bear some resemblance to the cutwater of a ship, and which would in fact answer the same purpose to the whale, would be the only part exposed to the pressure of the water in front, enabling him thus to pass with the greatest celerity and ease through the boundless tracks of his wide domain. It is in this shape of the head that the Sperm Whale differs in the most remarkable degree from the Greenland Whale, the shape of whose head more resembles that of the porpoise, and in it the nostril is situated much further back, rendering it seldom or never necessary for the nose to be elevated above the surface of the water, and when swimming even at the greatest speed, the Greenland Whale keeps nearly the whole of the head under it, but as his head tapers off evenly in front, this circumstance does not much impede his motion, the rate of which is, however, never equal to that of a Sperm Whale. It seems, indeed, in point of fact, that this purpose of rendering the head of light specific gravity, is the only use of this mass of oil and fat, although many have supposed, and not without some degree of probability, that the 'junk' especially may be serviceable in obviating the injurious effects of concussion, should the Whale happen to meet with any obstacle when in full career; this supposition, however, would appear hardly tenable when we consider the Greenland Whale, although living among the rock-like icebergs of the Arctic Seas, has no such convenient provision, and with senses probably in all, and certainly in one respect, less acute than those of the Sperm Whale, on which account it would seem requisite for him to possess this defence rather than the Sperm Whale, whose habitation is, for the most part, in the smiling latitude of the Southern Seas.

"The several humps and ridges on the back of the Sperm Whale constitute another difference in their external aspect; these prominences, however, are by no means peculiar only to the Sperm Whale, as they are possessed also by several other species of Whales, as the Razor-back and Broad-nosed Whales, and some others; and it would seem that the possession of these parts marks those Whales which are noted for their swiftness in flight, and their activity in endeavouring to defend themselves when attacked, which may be explained in this way, or it may be considered probable, that these prominences result from a greater development, in the situations where they are placed, of those processes of the vertebræ or bones composing the spine, called the spinal processes, and to which the muscles principally used in progression and other motions are attached, as well as those muscles and ligaments which support the long and bulky head; they consequently must indicate an increase in the size and strength of these muscles and ligaments, &c., and on *this account constitute a very remarkable difference between those Whales possessed of them, and those not so* furnished. This distinction is so great, that it induced Lacépede to divide the genus Balæna into those with a hump and those without, employing the name Balæna for the latter, and styling the others Balænoptera.

"The skin of the Sperm Whale, as of all other cetaceous animals, is without scales, smooth, but occasionally, in old whales, wrinkled, and frequently marked on the sides by linear impressions, appearing as if rubbed against some angular body. The colour of the skin, over the greater part of its extent, is very dark—most so on the upper part of the head, the back, and on the flukes, in which situations it is in fact sometimes black; on the sides it gradually assumes a lighter tint, till on the breast it becomes silvery gray. In different individuals there is, however, considerable variety of shade, and some are even piebald. Old 'Bulls,' as full-grown males are called by whalers, have generally a portion of gray on the nose, immediately above the fore part of the upper jaw, and they are then said to be gray-headed. In young whales the skin is about three-eighths of an inch thick, but in old ones it is not more than one-eighth. Immediately beneath the 'black skin' lies the blubber, or fat, which on the breast of a large whale acquires the thickness of 14 inches, and on most other parts of the body, it measures from 8 to 11. This covering is called, by South Sea whalers, the blanket; it is of a light yellow colour, and when melted down furnishes the Sperm oil. The blubber serves two excellent purposes to the whale, in rendering it buoyant, and in furnishing it with a warm protection from the coldness of the surrounding element, in this last respect answering well to the name bestowed upon it by the sailors."

The ingenious and intelligent author, from whose pamphlet we have made the preceding extracts, gives an account of the Rise and Progress of the Fishery, and of the modes of pursuing, killing, and "cutting in" the Sperm Whale. To the Pamphlet itself, as well as to Mr. Beale's more elaborate history of this important Whale, therefore, we beg to refer such of our readers as would wish for a more detailed narrative. We shall conclude with one short extract more from Mr. Beale's able "Observations."

"In calm weather great difficulty is sometimes experienced in approaching the Whale on account of the quickness of his sight and hearing. Under these circumstances the fishers have recourse to paddles instead of oars, and by this means can quietly get near enough to make use of the harpoon. When first struck, the Whale generally 'sounds,' or descends perpendicularly to an amazing depth, taking out perhaps the lines belonging to the four boats, 800 fathoms! afterwards, when weakened by loss of blood and fatigue, he becomes unable to 'sound,' but passes rapidly along the surface, towing after him perhaps three or four boats. If he does not turn, the people in the boats draw in the line by which they are attached to the Whale, and thus easily come up with him, even when going with great velocity; he is then easily lanced, and soon killed."

Mr. Gray has lately published an elaborate monograph of the Whales in one of the parts of the Zoology of H. M. SS. Erebus and Terror, and also a Catalogue of the Cetacea in the British Museum. The works of Scoresby and Beale give us large details of what is known about the history and capture of the two most important species in a commercial point of view. [See Dolphin, Narwhal, Porpoise, &c.]

WHEATEAR. (*Saxicola œnanthe.*) This Passerine bird is very generally diffused over the globe, and visits us early in the spring. It frequents new-tilled grounds, and is a close attendant on the plough, in search of insects and small worms, which are its principal food. In length the Wheatear is about five inches and a half. The Bill is black; eyes

Wheatear.—(*Saxicola œnanthe.*)

hazel; over the eyes, cheek, and ears is a broad black streak, and above it a line of white; the top of the head, hinder part of the neck, and the back are bluish gray; the wing-coverts and quills are dusky, edged with rusty white; the rump is perfectly white, as is also part of the tail; the rest black; the under parts are pale buff, tinged with red on the breast: legs and feet black. The Wheatear breeds under shelter of a tuft or clod, in newly-ploughed lands, or under stones and sometimes in old rabbit burrows: its nest, which is constructed with great care, is composed of dry grass or moss, mixed with wool, and is lined with feathers, and defended by a sort of covert fixed to the stone or clod under which it is formed: the female generally lays five or six light blue eggs, the larger end encompassed with a circle of a somewhat deeper hue. In some parts of England great numbers are taken in snares made of horse-hair, placed beneath a turf. They leave us about the latter end of August and September, and about that time are seen in great numbers by the sea shore, where, probably, they subsist some little time before they take their departure.

WHEAT-FLY. (*Cecidomyia tritici.*) The European Wheat-fly is a two-winged gnat, somewhat resembling a musquito in form, but is very small, being only about one tenth of an inch long. Its body is orange-... Its two wings are transparent, and ...able in colour; they are narrow at ... rounded at the tip, and are fring... little hairs on the edges. Its long ... are composed of twelve little bead-li... each encircled with minute hairs. ... the end of June, or when the wh... blossom, these flies appear in swarm... wheat-fields during the evening, ... time they are very active. The fe... nerally lay their eggs before nine o... night, thrusting them, by means ... retractile tube in the end of the ... within the chaffy scales of the fl... clusters of from two to fifteen, or m... day they remain at rest on the s... leaves of the plants, where they a... from the heat of the sun. They co... appear and lay their eggs three ... period of thirty-nine days. The ... oblong, transparent, and of a pale bl... and hatch in eight or ten days after ... laid. The young insects, produc... them, are little footless maggots, ... towards the head, and blunt at th... extremity, with the rings of the bo... what wrinkled and bulging at t... They are at first perfectly transpa... colourless, but soon take a deep ... orange colour. They do not travel ... floret to another, but move in a ... manner, and by sudden jerks of t... when disturbed. As many as fif... have been counted in a single flor... supposed that they live at first ... pollen, and thereby prevent the firs... of the grain. They are soon seen ... to crowd around the lower part of t... and there appear to subsist on th... destined to have formed the grai... latter, in consequence of their depr... becomes shrivelled and abortive; ... some seasons, a considerable part of ... is thereby rendered worthless. The ... when fully grown, are nearly one ... an inch long. It is said that the ... quit the ears of the wheat by the ... August, descend to the ground, and ... it to the depth of half an inch. I... bable that there they remain un... through the winter, and having finis... transformations, come out of the g... the winged form in the spring, ... wheat is about to blossom. Dr. A... has entered into the history, transfo... and habits of this insect with great ... the sixth volume of the Transactio... New York State Agricultural Societ... Jealous for the honour of his countr... tried to prove that it is not a native ... America, and was unknown there ... to the revolutionary war; but there ... doubt whether the Wheat-fly of Nor... rica is not a distinct species from ... ropean one. Mr. Say has named it ... *myia destructor*. [See Hessian-fly.]

WHIDAH FINCH. (*Vidua.*) ... of beautiful birds, inhabiting Wester... and particularly abundant in the ... of Whidah, — whence their name. ... has been corrupted, with so many

WIDOW BIRD. The body of the Whidah-finch is generally about the size of a canary-bird, but the male is remarkable for an astonishing development of plumage during the breeding season, after which its splendid tail drops off, and the sexes are then barely distinguishable. There are several species, one of which, VIDUA PARADISEA, will be sufficient to describe. The upper part of the plumage is of a faded or deep brownish-

WHIDAH FINCH.—(VIDUA PARADISEA.)

black; but this colour becomes of a paler hue on the wings and lateral tail-feathers. The head, chin, and throat are of this faded black, which extends downwards narrowing as it descends, to the middle of the breast. A broad rich orange rufous colour proceeds from the upper part of the back of the neck and unites with a tinge of the same colour on the sides of the neck and breast; this last hue passes into the pale buff of the body, but leaves the under tail-covers black, like the upper ones.

WHIMBREL. (*Numenius Phæopus.*) A species of grallatorial bird closely allied to the Curlew, but considerably smaller in size, being not above eighteen inches long. The plumage is of a grayish white, the feathers being streaked with brown; the scapulars are brown, with pale edges; the upper part of the head is divided longitudinally by a white line, bounded on each side by a black one; the bill is at least three inches long; the upper mandible is blackish brown, the lower one pale red. Dr. Fleming, in his British Animals, informs us that it forms its nest on exposed heaths in Zetland, and lays four or five eggs. After the breeding season it nearly disappears from the northern islands, but, during winter, frequents the English shores, associating in small flocks. [See CURLEW.]

WHINCHAT. (*Saxicola rubetra.*) A species of Passerine bird which is not unfrequent in the British islands, and may be commonly found on broom and furze, on the highest twigs of which it perches, and occasionally sings very sweetly. It builds its nest on the ground, forming it of dried sticks, and lining it with fine grass. The female lays six eggs of a uniform blue. It is rather larger than the Stonechat, to which it is closely allied. [See STONECHAT.]

WHIP-POOR-WILL. The American name of a species of Goatsucker (*Caprimulgus vociferus.*) Wilson tells us, in his interesting work on the Ornithology of America, that "on or about the 25th of April, if the season be not uncommonly cold, the whip-poor-will is first heard in Pennsylvania, in the evening, as the dusk of twilight commences, or in the morning as soon as dawn has broke. In the state of Kentucky I first heard this bird on the 14th of April, near the town of Danville. The notes of this solitary bird, from the ideas which are naturally associated with them, seem like the voice of an old friend, and are listened to by almost all with great interest. At first they issue from some retired part of the woods, the glen, or mountain; in a few evenings, perhaps, we hear them from the adjoining coppice, the garden fence, the road before the door, and even from the roof of the dwelling-house, long after the family have retired to rest. Some of the more ignorant and superstitious considered this near approach as foreboding no good to the family, nothing less than sickness, misfortune, or death, to some of its members; these visits, however, so often occur without any bad consequences, that this superstitious dread seems on the decline.

"He is now a regular acquaintance. Every morning and evening his shrill and rapid repetitions are heard from the adjoining woods, and when two or more are calling out at the same time, as is often the case in the pairing season, and at no great distance from each other, the noise, mingling with the echoes from the mountains, is really surprising. Strangers, in parts of the country where these birds are numerous, find it almost impossible for some time to sleep; while to those long acquainted with them, the sound often serves as a lullaby to assist their repose.

"These notes seem pretty plainly to articulate the words which have been generally applied to them, *whip-poor-will*, the first and last syllables being uttered with great emphasis, and the whole in about a second to each repetition; but when two or more males meet, their whip-poor-will altercations become much more rapid and incessant, as if each were straining to overpower or silence the other. When near, you often hear an introductory cluck between the notes. At these times, as well as at almost all others, they fly low, not more than a few feet from the surface, skimming about the house and before the door, alighting on the wood pile, or settling on the roof. Towards midnight they generally become silent, unless in clear moonlight, when they are heard with little intermission till morning. If there be a creek near, with high precipitous bushy banks, they are sure to be found in such situations. During the day they sit in the most retired, solitary, and deep shaded parts of the woods, generally on high ground, where they repose in silence. When disturbed, they rise within a few feet, sail low and slowly through the woods for thirty or forty yards, and generally settle on a low branch or on the ground. Their sight appears deficient during the day, as, like owls,

most unfrequented part of the wood, often where some brush, old logs, heaps of leaves, &c. had been lying, and always on a dry situation. The eggs are deposited on the ground, or on the leaves, not the slightest appearance of a nest being visible. These are usually two in number, in shape much resembling those of the night hawk, but having the ground colour much darker, and more thickly marbled with dark olive.

"Early in June, as soon as the young appear, the notes of the male usually cease, or are heard but rarely. Towards the latter part of summer, a short time before these birds leave us, they are again occasionally heard; but their call is then not so loud, much less emphatical, and more interrupted than in spring. Early in September they move off towards the south.

"The Whip-poor-will is nine inches and a half long, and nineteen inches in extent; the bill is blackish, a full quarter of an inch long, much stronger than that of the night hawk, and bent a little at the point, the under mandible arched a little upwards, following the curvature of the upper; the nostrils are prominent and tubular, their openings directed forward; the mouth is extravagantly large, of a pale flesh-colour within, and beset along the sides with a number of long, thick, elastic bristles, the longest of which extends more than half an inch beyond the point of the bill, end in fine hair, and curve inwards; these seem to serve as feelers, and prevent the escape of winged insects; the eyes are very large, full, and bluish black; the plumage above is so variegated with black, pale cream, brown, and rust-colour, sprinkled and powdered in such minute streaks and spots, as to defy description."

WHITE ADMIRAL [BUTTERFLY]. A name given by collectors to Butterflies of the genus *Limenitis*.

WHITE ANT. [See TERMES.]

WHITEBAIT. (*Clupea alba*. This small

terfly, *Vanessa Atal*

WHITE [BUTT
applied by collectors
of the genera *Pieris*,

WHITE SHARK

WHITING. (*M*
well-known fish bel
cod tribe, and valu
delicacy and lightne
It does not usually
half in weight; abo

WHITING.—(*Gad*

coasts, and comes
the shore in the m
February, for the p
spawn. It is easily
haddock by the abse
chin; and from the
having the under ja
and the tail even at

WIDGEON. (*Ana*
species of migratory
of the north, which t
of winter, and as th
end of their southe
themselves along th
marshes and lakes
Continent, as well
Isles. Here they re
at the end of which
the whole tribe, in f
departure northward
They commonly fly
the night, and may
congeners by their w

vinous colour: a band of waved or indented narrow ash brown and white lines separates the breast and neck; the back and scapulars are marked with similar feathers, as are also the sides of the body under the wings: the belly, to the vent, is white: the great wing-coverts are brown, edged with white and tipped with black, which forms an upper border to the changeable green beauty-spot of the wings, which is also bordered on the under side by another stripe formed by the

WIDOWBIRD.—(MALBOCA PENELOPE.)

deep velvet black tips of the secondary quills: the exterior webs of the adjoining quills are white, and those next the back are of a deep brown, edged with yellowish white: the vent and upper tail-coverts are black. The tail is of a brownish ash colour, edged with yellowish white; the two middle feathers being sharp-pointed, darker and longer than the rest. The legs and toes are of a dull lead colour, faintly tinged with green; the middle of the webs and nails black. The female is of a sober brown; the fore part of the neck and breast paler; scapulars dark brown, edges paler; wings and belly as in the male. The young of both sexes are gray, and continue so till February, when the plumage of the male begins gradually to assume its rich colourings; but after July the feathers become dark and gray, so that he is hardly to be distinguished from his mate.

WIDOW-BIRD. [See WHIDAH-FINCH.]

WILLOW WREN. (*Sylvia trochilus.*) For a most pleasing description of this "fairy bird," we turn to Mr. W. C. Hewitson's elegant 'Illustrations,' &c.: and, with his consent, we copy the greater part of it. "Much as I love all the dear birds of summer," says this gentleman, "there is not one the return of which I have yearly witnessed with so much pleasure as that of the Willow Wren; and however more highly the rich melody of some of the other warblers may be prized, there is a simplicity and a sweet cadence about the note of this species, which never fails to excite within me feelings of pleasure, which none but the lover of nature can either appreciate or understand, but which are to him amongst the chief enjoyments of his life. The Willow Wren is one of the most abundant of the warblers, and almost every wood and copse is enlivened by its beautiful form and graceful motions. It is, too, an inhabitant of more northern countries; and I *shall not readily forget* the *delight I experienced on hearing* its soft *sweet note, whilst seated within* the Arctic Circle, upon one of the bleak isles of Norway.

"The Willow Wren builds its nest upon the ground, sometimes in the midst of woods, when not thick, but more commonly near their margin, or in open places, or by the side of those grassy drives which are cut through them. It may be found in most of those grassy banks where brushwood occurs. In shape the nest resembles that of the common wren, being arched over, and entered from the side; it is, however, much more fragile, and not easily moved entire; it is composed of dry grass and moss, with dead leaves, warmly lined with feathers. . . . Mr. Neville Wood, in his British Song Birds, quotes a letter from Dr. Liverpool, describing the readiness with which the Willow Wren becomes sociable. To this I can add a most interesting instance. To ascertain beyond doubt the identity of the two varieties of the eggs figured, I had captured, on their nests, several of the birds. Amongst these was one which I had carried home and confined during the night in a large box, and such was its tameness, that when I took it out the following morning, and would have set it at liberty, it seemed to have no wish to leave my hand, and would hop about the table at which I was sitting, picking up flies which I caught for it. In the autumn, previous to their departure, the Willow Wrens frequent our gardens and orchards, where they may be seen busily picking insects from the pea-straw, and other vegetables, the young ones easily distinguished by their brighter yellow colouring; sometimes warbling a farewell song, but in a tone far different to their joyous carol in the spring, and so subdued that it is scarcely audible."

We are also indebted to the kindness of Mr. A. Hepburn, of Whittingham, for the following interesting notes on the WILLOW WREN. This plainly coloured but elegantly shaped species is a summer visitant in Britain, arriving in April and departing in September, and is abundantly distributed over the whole wooded parts of the country. The male announces his presence by a simple song, composed of a few notes, on a descending scale, but the tone is so silvery that it seems to tell of all the sweet influences of spring, the April shower and sunshine, the bursting bud and the opening flower; and what eye for the beautiful can fail to mark the elegance of his form as he nimbly glides amongst the young leaves, springs into the air after an insect, or flits from tree to tree? By and by, when mated, a snug arched nest is built on the ground, in a tuft of grass or amongst other rank vegetation, and six or seven little white eggs spotted with red are deposited: the young are fed on a variety of caterpillars and insects, by the destruction of which, great benefit is conferred on the labours of the husbandman and gardener. There are often two broods in the season.

WINDHOVER. [See KESTREL.]

WOLF. (Canis Lupus.) A ferocious quadruped belonging to the Digitigrade Carnivora, in habits and physical development closely related to the Dog. The Common

European Wolf is yellowish or fulvous gray: hair harsh and strong, longest below the ears and on the neck, shoulders, and haunches: muzzle black; cheeks and parts above the eyes ochreous or gray: upper lip and chin white: eyes oblique: tail straight or nearly so; and a blackish streak or band on the fore-legs about the carpus. Cuvier states that this Wolf, which more commonly infests the western countries of Europe, is found from Egypt to Lapland, and seems to have passed over into America. The French wolves are generally browner and somewhat

WOLF.—(CANIS LUPUS.)

smaller than those of Germany; while those of Russia are longer, and appear more bulky and formidable from the great quantity of long coarse hair on the cheeks, throat, and neck. In Sweden and Norway the Wolves are very similar to the Russian race, but are lighter in colour, and in winter totally white. The Alpine Wolves are brownish-gray, and smaller than the French; those of Italy and to the eastward towards Turkey, fulvous. There is no doubt whatever that Wolves formerly lurked in the uncleared woody districts of Britain; and there is sufficient historical evidence to prove that the Romans endeavoured to extirpate them; but although they considerably thinned these ferocious and cowardly beasts of prey, enough was left for their Saxon and Norman successors to do; and notwithstanding the laws of Edgar were specially directed to their extirpation, by liberating the Welsh from the tax of gold and silver on condition of an annual tribute of three hundred Wolves, and the punishment awarded to English criminals was commuted to a delivery of a certain number of Wolves' tongues, yet the vast wild tracts and extensive forests of ancient Britain were holds too strong even for his wise and vigorous measures.

There are several species of this animal, the chief of which is the BLACK WOLF, frequent in the Pyrenees and to the south of those mountains, where it is more numerous than the Common Wolf above described, and exceeds it in strength and stature. "The Spanish Wolves," says Col. Hamilton Smith, "congregated formerly in the passes of the Pyrenees in large troops, and even now the *Isard* will accompany strings of mules as soon as it becomes dusky. They are seen bounding from bush to bush by the side of travellers, and keeping parallel with them as they proceed, waiting an opportunity to select a victim; and often succeeding, unless the muleteers can reach some place of safety before dark."

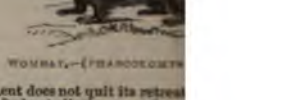
WOLF-FISH. (*Anarrh*
Acanthopterygious fish, bel
Gobioidea family, generally
and furnished with jaws so w
render it a dangerous inh
deep. The whole body is sm
the jaws, vomer, and palate-b
with large bony tubercles w
their summits little enamelle
anterior teeth are conical and
are six gill-rays, and neithe
bladder. This fish inhabits
being common enough as lo
coast. They sometimes attai
six or seven feet, but their
size is from eighteen inches t
latter of which will weigh
pounds. It has a hoary
whitish belly, dark head wit
and two rows of large blackis
It feeds upon crustacea and
it breaks in pieces with its te
is serpentine, like that of a

WOLF-FISH.—(ANARRHICH

It is seen reposing in the cle
body is undulated. Fabe
on the Greenland coast it
with the common Lump-
along with it; that is, re
deep sea in autumn, and ret
spring. Its great size and f
do not protect it from the
Lump-fish, for the latter, wh
the safety of its offspring, pur
fish, and fastening upon its
it to death.

WOLVERINE. [See GU

WOMBAT. (*Phascolomys*
little bear-like Marsupial
known in New South Wales,
the natives *Womat*, *Wombat*
according to the different d
haps to the different renderi
rangers who brought the in
burrows like the badger, an



WOMBAT.—(PHASCOLOMYS

tinent does not quit its retreat
it feeds at all times on the
lands, and was commonly
amongst the sea refuse on
the coarse grass around

nt. Bass, the intrepid surgeon and
er, whose name is commemorated in
ralt separating Van Dieman's Land
ustralia, first found this curious ani-
The natives eat its flesh, and, as is
with them, roast it. It is sometimes
it to this country; the only specimen
ve seen was very dull and unintelli-
It has a clumsy body, and a large
head; fore feet with five toes, armed
crooked nails, hind feet with four,
little tubercle without a nail in
of the great toe. The hair is coarse,
set upon the belly, thicker on the
nd head, and thickest upon the loins
ump; the colour of it a light sandy
of varying shades, but darkest along
ck. According to the account given
by the natives, the Wombat of the
tains is never seen during the day,
ves retired in his hole, or burrow,
is long and winding; it feeds only
the night; but that of the islands is
feed in all parts of the day.

ODCOCK. (*Scolopax rusticola.*) A
of migratory birds of the Snipe tribe;
ring fourteen inches in length, twenty-
breadth, and weighing about twelve
. The shape of the head is remark-
eing rather obtusely triangular than
with the eyes placed near the top,
he ears very forward. The upper
ble, which measures about three inches,
owed nearly its whole length, and at
p it projects beyond, and hangs over,
nder one, ending in a kind of knob,
is susceptible of the finest feeling, and
ated, by that means, to find the small
in the soft moist grounds, from whence
racts them with its sharp-pointed
. The crown of the head is ash
; the nape and back part of the neck
ck, marbled with three bars of rusty
black line extends from the corners
mouth to the eyes, the orbits of which
le buff: the whole of the under parts
ellowish white, numerously barred
ark waved lines. The tail is black,
ed across with reddish spots on the
: the tip is ash above, and glossy white
. The legs are short, feathered to the
and are either of a sallow flesh-colour
bluish hue. The upper parts of the
ge are so mottled, barred, streaked,
riegated, as would render a minute
ption both difficult and tedious. The
white, red, gray, brown, rufous, and
, are so disposed in rows, crossed and
at intervals by lines and marks of
nt shapes, that the whole, seen at a
distance, appear to be undistinguish-
blended together and confused; the
man, however, by being accustomed to
nabled to discover it (among the wi-
stalks and leaves of ferns, sticks,
and grasses, by which it is generally
ed in its moist and solitary retreats)
fall dark eye and glossy silver-white
tail. The Woodcock leaves the
ses bordering upon the Baltic in the
n and *setting in of winter*, on its
to this country. They neither come
in flocks, nor remain near the shores to take their rest longer than a day. In temperate weather, they retire to the mossy moors and bleak mountainous parts of the country; but as soon as the frost sets in, and the snow begins to fall, they return to lower and warmer situations, where they meet with boggy grounds and springs, and little oozing mossy rills which are rarely frozen, and seek the shelter of close bushes of holly, furze, &c. in the woody glens by day, and remove to different haunts and feed only in the night. The female makes her nest on the ground, generally at the root or stump of a decayed tree; it is carelessly formed of dry fibres and leaves, upon which she lays four or five rusty gray eggs, blotched and marked with dusky spots. The flight of the Woodcock is rapid when pursued by the sportsman. Its flesh is highly esteemed.

WOOD-CRACKER. A name not uncommonly applied to the Nuthatch (*Sitta Europæa*). [See NUTHATCH.]

WOODLARK. [See LARK.]

WOOD-LEOPARD. The name applied to a beautiful species of Moth (*Zeuzera Æsculi*). [See ZEUZERA.]

WOODPECKERS. A great group of Zygodactylous Birds, well characterized by their striking and singular habits, to which their whole structure is singularly adapted. Mr. Bewick has described the family as having the bill large, strong, and fitted for its employment: the end of it is sharp and formed like a wedge, with which it pierces the bark of trees, and penetrates through the outside sound wood of the tree to the inside decayed part, where its food is lodged. Its neck is short and thick, and furnished with powerful muscles, which enable it to strike with such force as to be heard at a considerable distance: the noise thus occasioned is not by vibration round a hole, as some authors assert, but by a succession of strokes repeated with surprising rapidity. Its tongue is long and taper, and capable of great elongation; at the end of it there is in most of the species a hard horny substance, curving slightly downwards, which penetrates into the crevices of trees, and extracts the insects and their eggs which are lodged there: it is also lubricated by a glutinous secretion. The tail consists of ten stiff, sharp-pointed feathers, rough on the under sides, and bent inwards, by which it supports itself on the trunks of trees while in search of food: for this purpose its feet are short and thick, and its toes, which are placed two forward and two backward, are armed with strong hooked claws, by which it clings firmly, and creeps up and down in all directions.

Mr. Yarrell observes that another anatomical peculiarity remarkable in the skeleton of the Woodpecker, but admirably adapted to its habits, is the small size of the keel of the breast-bone. "Moderate powers of flight," he says, "sufficient to transport the bird from tree to tree, are all that it seems to require; large pectoral muscles with a deep keel to the breast-bone would to this

bird be an inconvenience. The descending position of the bones of the tail indicate the mode by which the stiff points of the tail feathers are brought into contact with the surface of the bark of the tree to form an accessory prop."

The Green Woodpecker. (*Picus viridis.*) The bill of this bird, which is the second in size of the British kinds, is two inches long, triangular, and of a dark horn colour; the tongue towards the tip is furnished with numerous fibres, projecting transversely, of the size of minute hairs; the outer circle of the eye is white, surrounding another of red; top of the head bright crimson, which extends down the hinder part of the neck, ending in a point behind; the eye is surrounded by a black space; and from each corner of the bill runs a crimson streak pointing downwards; the back and coverts

GREEN WOODPECKER. (PICUS VIRIDIS.)

olive green; rump yellow; the quill feathers are dusky, barred on the outer web with black and white; under parts of the body white, slightly tinged with green; and the tail is marked with bars like the wings. This species obtains its food both upon trees and on the ground; its flight is short, undulating, and rather laborious. "When seen moving upon a tree," says Mr. Yarrell, "the bird is mostly ascending in a direction more or less oblique, and is believed to be incapable of descending unless this action is performed backwards. On flying to a tree to make a new search, the bird settles low down on the bole or body of the tree, but a few feet above the ground, and generally below the lowest large branch, as if to have all its work above it, and proceeds from thence upwards, alternately tapping to induce any hidden insect to change its place, pecking holes in a decayed branch, that it may be able to reach any insects that are lodged within, or producing its long extensible tongue to take up any insect on the surface; but the summit of the tree once obtained, the bird does not descend over the examined part, but flies off to another tree, or to another part of the same tree, to recommence its search lower down, nearer the ground." The female differs from the male in not having the red mark from the corner of the mouth: she makes h hollow of a tree, fifteen or tw the ground. Both male and by turns in boring through the the wood until they penetrate is decayed and rotten, where six eggs, of a greenish colour, small black spots. The Gree is frequently seen on the grou are ant-hills. It inserts its lo the holes through which the draws out those insects in abu times, with its feet and bill, it in the nest, and devours them gether with their eggs.

The Ivory-billed Woodp (*principalis.*) This fine spec pecker is a native of Brazil, M Southern States of North A bird is about twenty inches thirty in extent. "He is cultivated tracts," says Nutta of his dominion is the lonely trees of the greatest magnitud sted trumpeting note, somew the high tones of the clarionet, after day, and until a late

IVORY BILLED WOODP (PICUS PRINCIPALI

echoing loudly from the recess cypress swamps, where he dwel security, without showing any or necessary desire to quit his abodes. Upon the giant tre grown arms of this colossus of t amidst inaccessible and almost of mouldering logs, the high re and repeated strokes of this pr pecker are often the only sou brate through and communi life to these dismal wilds. interrupted call, and loud indi may often be heard for mor mile, and become audible at tances, as the elevated mo expresses his voice, or as he fl himself on the tuberous emp reviving habits, work, noise, occupations, sudden scenes of

afford withal a peculiar scene of solemn
ur, on which the mind dwells for a
at with sublime contemplation, con-
that there is no scene in nature devoid
monious consistence. Nor is the per-
ce of this industrious hermit less re-
ble than the peals of his sonorous
or the loud choppings of his powerful
He is soon surrounded with striking
ments of his industry: like a real
ter (a nickname given him by the
rds), he is seen surrounded with cart-
f chips and broad flakes of bark, which
y accumulate round the roots of the
ne and cypress where he has been a
ours employed; the work of half a
men, felling trees for a whole morning,
scarcely exceed the pile he has pro-
in quest of a single breakfast upon
nsect larvæ which have already, per-
succeeded in deadening the tree pre-
ry to his repast. The plumage of this
black with a gloss of green: forepart
head black, the rest of the crest crim-
ith some white at the base: a stripe
ite proceeding from a little below the
ven each side of the neck, and along
ck nearly to the rump. Tail black,
g from the two exterior feathers, legs
lour. Bill an inch broad at the base,
elled, and of the colour and consistence
ry. Tongue white: iris vivid yellow.
emale lays four or five white eggs,
are generally deposited in a hole in
ink of a cypress tree.

Black Woodpecker. (*Picus* [*Dryo-martius.*) Of all the species of Wood-
s known in Britain this is the largest
e scarcest. It is about sixteen inches
th; bill nearly two and a half, of a
olour, and pale yellow on the sides;
of the head, occiput and moustaches
nt red; face black, upper parts a beau-
green; tail shaded with brown and
transversely; rump tinged with yel-
; quills brown, and all the rest of the
ge dull black. The legs are lead gray,
the fore part covered with feathers
eir length. The female differs from
ale, the hinder part of her head only
red, and in some specimens the red is
y wanting; the black parts of her plu-
re also duller. They form their nest
deep hollows of old trees, and lay two
e white eggs.

have given descriptions of only three
of Woodpeckers, although the number
considerable, and they are to be met
each quarter of the globe. Among
latic Woodpeckers may be named the
Picus squamatus and *Picus occipitalis*,
ed by Mr. Gould; among those of
Picus cafer, the head, belly, and rump
h are yellow, and the upper coverts of
orange; and among those of Ame-
the *Gold-winged Woodpecker* (*Colaptes*
s), at once distinguished by the com-
e slightness and length of its bill and
tifully varied plumage, part of the
being of a yellow colour, whence its
another species is black and white
or mottled—"*the finest*," says Lawson, "I ever saw. The cock has a red crown. He is not very wild, but will let one come up to him; then shifts on the

GOLD-WINGED WOODPECKER.
(COLAPTES AURATUS.)

other side of the tree from your sight; and so dodges you for a long time together. This would seem to be the Red-headed Woodpecker (*Picus erythrocephalus*), of

RED-HEADED WOODPECKER.
(PICUS ERYTHROCEPHALUS.)

which the subjoined cut gives a very good representation; M. Malherbe of Metz has made the extensive family of Woodpeckers a particular object of study, and has described many new species.

Wood-Swallow. (*Artamus.*) Several species of this genus of birds are described by Mr. Gould, in that magnificent work, 'The Birds of Australia;' from his account of one of which (*Artamus sordidus*) we take the liberty of making the following extract: "This Wood-Swallow, besides being the commonest species of the genus, must I think be rendered a general favourite with the Australians, not only from its singular and pleasing actions, but by its often taking up its abode and incubating near the houses; particularly such as are surrounded by paddocks and open pasture-lands skirted by large trees. It was in such situations as these in Van Diemen's Land, at the commencement of spring, that I first had an

up and closes one wing at a time, and spreads the tail obliquely prior to settling. At other times a few were seen perched on the fence surrounding the paddock, on which they frequently descended, like starlings in search of coleoptera and other insects. It is not, however, in this state of comparative quiescence that this graceful bird is seen to the greatest advantage, neither is it that kind of existence for which its form is especially adapted; for although its structure is more equally suited for terrestrial, arboreal, and aerial habits than that of any other species I have examined, the form of its wing at once points out the air as its peculiar province: hence it is, that when engaged in pursuit of the insects which the serene and warm weather has enticed from their lurking-places among the foliage to sport in higher regions, this beautiful species in these aërial flights displays its greatest beauty, while soaring above, in a variety of easy positions, with white-tipped tail widely spread." Another very extraordinary and singular habit of this bird is its manner of suspending itself in perfect clusters, like a swarm of bees; a few birds suspending themselves on the under side of a dead branch, while others of the flock attach themselves one to the other, in such numbers, we are told, that they have been observed nearly of the size of a bushel measure.

The head, neck, and whole of the body fuliginous gray; wings and tail dark bluish black; the external edges of some of the primaries white, and the tail feathers tipped with white; bill blue with a black tip; feet lead colour. The nest, which is variously placed, sometimes in the naked fork, and at others in a thickly foliated bough near the ground, is about five inches in diameter, round, and rather shallow.

The other species described by Mr. Gould are the GRAY-BREASTED WOOD-SWALLOW, (*Artamus cinereus*), which is the largest of the genus: the LITTLE WOOD-SWALLOW

mandible and tips of a brownish horn colour, the under one, and edges of both, dull yellow; a whitish line extends from the bill over the eyes, which are dark hazel; the upper parts of the plumage are clear brown, obscurely marked on the back and rump with narrow double wavy lines of pale and

WREN.—(TROGLODYTES VULGARIS.)

dark brown colours; the belly, sides, and thighs are marked with the same colours, but more distinctly; the throat is dingy white; cheeks and breast the same, faintly dappled with brown; the quills and tail are marked with alternate bars of a reddish brown and black; legs pale olive brown. During the winter season this brisk little warbler approaches near the dwellings of man, and takes shelter in the roofs of houses, barns, and in hay-stacks; it sings till late in the evening, and not unfrequently during a fall of snow. In the spring it betakes itself to the woods, where it builds on the ground, or in a low bush, and sometimes on the turf, beneath the trunk of a tree, or in a hole in a wall; its nest is constructed with much art, of an oval shape, with one small aperture in the side for an entrance; it is composed chiefly of moss, or other surrounding materials, so as not to be easily distinguished from them, and lined with feathers; the female lays from ten to sixteen or eighteen eggs, which are white, thinly sprinkled with small reddish spots, mostly at the larger end.

[For Golden-crested Wren, see Regulus.]

The American House Wren. (*Troglodytes domestica.*) We copy the following amusing account, *verbatim*, from 'Wilson's American Ornithology.'

"This well-known and familiar bird arrives in Pennsylvania about the middle of April; and, about the 8th or 10th of May, begins to build its nest, sometimes in the wooden cornishing under the eaves, or in a hollow cherry tree; but most commonly in small boxes, fixed on the top of a pole, in or near the garden, to which he is extremely partial, for the great number of caterpillars and other larvæ with which it constantly supplies him. If all these conveniences are wanting, he will even put up with an old hat, nailed on the weather boards, with a small hole for entrance; and, if even this be denied him, he will find some hole, corner, or crevice, about *the house, barn*, or stables, *rather than abandon the dwellings* of man. In the month of June, a mower hung up his coat, under a shed, near the barn; two or three days elapsed before he had occasion to put it on again; thrusting his arm up the sleeve, he found it completely filled with some rubbish, as he expressed it, and, on extracting the whole mass, found it to be the nest of a wren completely finished, and lined with a large quantity of feathers. In his retreat, he was followed by the little forlorn proprietors, who scolded him with great vehemence, for thus ruining the whole

AMERICAN HOUSE WREN.
(TROGLODYTES DOMESTICA.)

economy of their household affairs. The twigs with which the outward parts of the nest are constructed are short and crooked, that they may the better hook in with one another, and the hole or entrance is so much shut up, to prevent the intrusion of snakes or cats, that it appears almost impossible the body of the bird could be admitted; within this, is a layer of fine dried stalks of grass, and lastly feathers. The eggs are six or seven, and sometimes nine, of a red purplish flesh colour, innumerable fine grains of that tint being thickly sprinkled over the whole egg. They generally raise two broods in a season; the first about the beginning of June, the second in July.

"This little bird has a strong antipathy to cats; for, having frequent occasion to glean among the currant bushes, and other shrubbery in the garden, those lurking enemies of the feathered race often prove fatal to him. A box fixed up in the window of the room where I slept, was taken possession of by a pair of wrens. Already the nest was built, and two eggs laid, when one day, the window being open, as well as the room door, the female wren, venturing too far into the room to reconnoitre, was sprung upon by grimalkin, who had planted herself there for the purpose; and, before relief could be given, was destroyed. Curious to see how the survivor would demean himself, I watched him carefully for several days. At first he sung with great vivacity for an hour or so, but, becoming uneasy, went off for half an hour; on his return, he chanted again as before, went to the top of the house, stable, and weeping willow, that she might hear him; but seeing no appearance of her, he returned once more, visited the nest, ventured cautiously into the window, gazed about with suspicious looks, his voice sinking to a low melancholy note, as he stretched his little neck about in every direction. Returning to the box, he seemed for some minutes at a loss what to do, and soon after went off, as I thought, altogether, for I saw

the place of the two latter with materials of the same sort; and ultimately succeeded in raising a brood of seven young, all of which escaped in safety.

"The immense number of insects which this sociable little bird removes from the garden and fruit trees, ought to endear him to every cultivator, even if he had nothing else to recommend him; but his notes, loud, sprightly, tremulous, and repeated every few seconds with great animation, are extremely agreeable. In the heat of summer, families in the country often dine in the piazza adjoining green canopies of mantling grape vines, gourds, &c., while overhead the trilling vivacity of the wren, mingled with the warbling mimicry of the cat-bird, and the distant softened sounds of numerous other songsters, form a soul-soothing and almost heavenly music, breathing peace, innocence, and rural repose. The European who judges of the song of this species by that of his own wren (*m. troglodytes*) will do injustice to the former, as in strength of tone, and execution, it is far superior, as well as the bird is in size, figure, and elegance of markings, to the European one. Its manners are also different; its sociability greater. It is no underground inhabitant; its nest is differently constructed, the number of its eggs fewer; it is also migratory; and has the tail and bill much longer. Its food is insects and caterpillars, and, while supplying the wants of its young, it destroys, on a moderate calculation, many hundreds a day, and greatly circumscribes the ravages of these vermin. It is a bold and insolent bird against those of the titmouse or woodpecker kind that venture to build within its jurisdiction; attacking them without hesitation, though twice its size, and generally forcing them to decamp. Even the bluebird, who claims an equal and sort of hereditary right to the box in the garden, when attacked by this little impertinent, soon relinquishes the contest, the mild placidness of its disposition not being a match for the fiery impetuosity of his little antagonist. With those of his

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two behind; the claws sharp, much hooked, and formed for climbing branches of trees, on which it can run with the utmost facility. The Wryneck is found in various parts of

(WRYNECK.—(YUNX TORQUILLA.)

Europe, and generally precedes the Cuckoo a few days. Its food consists chiefly of ants and other insects, of which it finds great abundance lodged in the bark and crevices of trees.

XANTHO. A genus of Brachyurous Crustaceans, of which there are numerous species, extensively distributed. The carapace is very wide, but never regularly ovoid, and not very convex. They are arranged by Milne Edwards into those species whose carapace is granulous or tuberculous above—and those species whose carrapace is not covered either with granulations or tubercles. One species, *Xantho floridus*, about two inches in length, of a reddish brown colour, with black claws, is common on the English and French coasts.

XANTHORNUS. The generic name used by Brisson for certain American birds. [See ORIOLE, BALTIMORE.]

XENOPS. The name used by Illiger for a genus of Fissirostral birds of South America; one species of which (*Xenops genibarbis*) is thus described by *Mr.* Swainson: above reddish, beneath gray-brown; chin, eyebrows, and spots on the throat and breast whitish; beneath the ears a snowy spot; lesser quills blackish, the base fulvous, the tips and margins rufous. Mr. Swainson remarks that this extraordinary and not inelegant little creature has a bill totally different from that of any other bird. Its general habit, he states, evinces a close connection with the *Sittæ*, particularly those of New Holland; some of which have their bills (which are slender) slightly inclining upwards, thus forming a connection between *Xenops* and the straight-billed *Sittæ* of the Old World.

XIPHIAS. [See SWORD-FISH.]

XYLOCOPA. A genus of Hymenopterous insects, frequently termed *Carpenter Bees*, from their boring holes in wood. They are characterized by the very thick coating of hairs upon the hind legs of the females, which are used by *them as pollen-brushes*. They *form their nests in crevices* of old walls or in sunny banks; their cells are composed of earth, and are very smooth in the inside, and the mouth of the nest is closed with the same material. Their wings are most commonly black, with a fine purple or violet gloss.

XYLOPHAGA. A genus of small Conchiferous Molluscs, very similar to those of *Teredo*, and which are found in light wood that the animals have penetrated to the depth of about an inch. The valves are equal, globose, inequilateral, and closed at the back; they have no calcareous tube, but two small accessory testaceous pieces placed near the hinge, and one small tooth in each valve.

XYLOPHAGI. A family of insects of the order Coleoptera Tetramera, distinguished from the Weevils by the absence of a proboscis. These insects generally live in wood, which is perforated and channelled in various directions by their larvæ. The different species commit their ravages on various kinds of trees, some feeding on pines and firs, others on olives, and some restricting themselves to fungi. [See SCOLYTIDÆ.]

XYLOPHILI. An extensive series of gigantic Coleopterous insects, the males of which are particularly distinguished by various singular protuberances, horns or tubercles, arising from the head and thorax. They reside for the most part in tropical regions, and some of them acquire an immense size. [See DYNASTIDÆ and RUTELIDÆ.]

XYPHOSURA. A sub-class of Crustacea, so called from the long tail-like spine, so characteristic a mark of the King-Crab. There is only one well-marked genus of this group, which will be found described under the head of LIMULUS.

YAK. (*Poephagus grunniens.*) A species of Ox found in Thibet, among the mountains; the bushy white tail is much prized in the East, where it is used to brush away flies, and also as an emblem of authority.

YARKE. The native name of different South American monkeys of the genus *Pithecia*.

YELLOWHAMMER. (*Emberiza citrinella.*) This Passerine bird, which is about seven inches in length, is found a resident in this country, and generally throughout Europe. The male is known by the head, cheeks, front of the neck, belly, and tail-coverts being of a bright yellow; on the breast and sides reddish spots, which on the sides leave a black streak in the centre. Feathers of the top of the back, blackish in the middle, and reddish-brown on the sides; those on the rump bright chesnut, terminated with grayish; tail-feathers blackish, the two lateral ones with a conical white spot on the inner barbs. Feet yellowish. The female is smaller than the male; and the yellow of the head, throat, and neck more thickly marked with the brown and olive spots with which those parts are sprinkled. Their food consists of grain, seeds, and insects. We summer the well-known notes of the male

are almost incessantly heard from the road-side hedge. In winter the yellowhammer joins the flocks of greenfinches, chaffinches, &c., which congregate in the fields and farm-yards. The nest, made on or near the ground,

YELLOWHAMMER.
(EMBERIZA CITRINELLA.)

is composed of moss, roots, and hair, well interwoven. The female lays four or five pale purplish white eggs, streaked and speckled with dark reddish-brown, and the male takes his turn with her in the business of incubation.

YPONOMEUTIDÆ. A family of Heterocerous Lepidoptera, comprising an extensive collection of minute Moths. The body is ordinarily slender and elongated; the head is small and occasionally clothed with long scales in front; the antennæ long, slender, and generally simple in both sexes; the wings are entire, and often long, and more or less convoluted; the legs are of moderate length and spurred; the anterior tibiæ having one, the intermediate two, and the posterior four spurs; the palpi are generally long and slender, and mostly recurved. Some of the species reside in the larva state on flowers, upon which they subsist; others are found within the surfaces of leaves, devouring only the parenchyma; some form extensive webs, and live in society; others are solitary. Some species are remarkably brilliant; their wings being ornamented with highly polished metallic scales, and some of them being extremely varied in the number of their tints.

"The typical insects of this family, forming Latreille's genus *Yponomeuta*, are amongst the largest in the family, having the fore wings long, and convoluted when at rest, and the posterior large, and with moderate cilia. They are generally of white or slate colours with black spots, whence their names of small Ermine Moths: the larvæ reside in large societies under a common web on various fruit-trees, and especially on white-thorn hedges, which are sometimes entirely defoliated by them. I have also seen the apple-trees, along the sides of the roads in France, equally deprived of their leaves by these insects, and festoons of their webs suspended from the trees, and clothing the surface of the ground beneath the trees. These larvæ are of a slate colour with black dots, and let themselves down to the ground when alarmed. They form their cocoons in company together; in the midst of their webs. The elegant species of *Ecophora* fly during the day, frequenting gardens and hedges. *Adela* also comprises day-flying species, known under the name of "Japan Moths," from their polished metallic wings, and sometimes called "Long-horns," from the great length of the antennæ. They frequent woods, and fly in troops, like gnats, over the bushes in the sunshine. But the most beautiful species in the family are those minute moths with metallic spotted wings, the majority of which in the larvæ state are *leaf-miners*.

ZEBRA. The name given to at least two species of South African mammalia, belonging to the family that contains the Horse and the Ass. They are beautifully banded, and have never yet been thoroughly domesticated. The Zebras are closely allied to the common ass, the gradations, as it were, being the Quaggs (See QUAGGA), and Dauws (*Equus hemionus*). Two species of Zebra are known, both natives of the Southern parts of Africa, where they are frequently found in large herds: the one frequents mountainous districts, while the other only occurs in the plains, where it associates with some of the antelopes, and even with the Ostrich.

The COMMON ZEBRA (*Equus Zebra*, L.) is found in South Africa, both within and beyond the Cape Colony, but is confined to the mountainous regions. Dr. Burchell, not knowing that it was the Zebra of the older naturalists, has very characteristically named it *Equus montanus*. It may be at once known from the following species by the pure white ground-colour of its coat, and the numerous glossy jet-black bands with which it is striped, except on the belly; the legs also are striped from the top to the bottom; the ears are longer than in the following species, while the tail is tufted, like that of the ass, the tuft being of a black colour. There are other characters, but these may suffice to distinguish it. Major Harris as well as other travellers tell us that it seeks the wildest and most sequestered spots, so that it is exceedingly difficult of approach, not only from its watchful habits and very great agility of foot, but also from the inaccessible nature of its highland abode. The herds graze on the steep hill side, with a sentinel posted on some adjacent crag, ready to sound the alarm in case of any suspicious approach to their feeding quarters, and no sooner is the alarm given than away they scamper with pricked ears, and whisking their tails aloft, to places where few, if any, would venture to pursue. It is the *wilde Paard* (wild horse) of the Cape Colonists, and the *Daous* of the Hottentot.

BURCHELL'S ZEBRA (*Equus Burchellii*, Gray). This beautiful species inhabits the plains of South Africa beyond the Gariep or Orange river, but is never, according to Major Harris, found to the southward of that stream. The ears and tail more resemble those of the horse than the preceding species, which approaches the ass in these particulars. The back, neck, and head are tinged with brown, harmoniously banded with black and deep brown, transverse stripes; the white

egs are pure white; there are obscure of black transverse markings on the Major Harris, who had so many opnities of seeing this fine species in a of nature, remarks that, "beautifully y the hand of nature, possessing much graceful symmetry of the horse, with bone and muscular power, united to and stylish action — thus combining iness of figure with solidity of form, ecies, if subjugated and domesticated, assuredly make the best pony in the . Although it admits of being tamed rtain extent with considerable facility, lf-domesticated specimen with a jockey brindled back being occasionally exin Cape Town for sale, — it has hitherto ved to evade the yoke of servitude.

HELL'S ZEBRA.—(EQUUS BURCHELLII.)

The voice of this free-born son of sert has no analogy to the discordant ng of the ass, but consists of a shrill t neigh, which may be likened to the ng of a dog, as heard by a passer by, the interior of a house. The senses of hearing, and smell are extremely de- The slightest noise or motion, no an the appearance of any object that amiliar, at once rivets their gaze, and them to stop and listen with the utattention; any taint in the air equally ting their olfactory organs. Instinct g taught these beautiful animals that ion consists their strength, they com- in a compact body when menaced by ack either from man or beast; and, if aken by the foe, they unite for mutual ce, with their heads together in a close ar band, presenting their heels to the y, and dealing out kicks in equal force bundance. Beset on all sides, or parcrippled, they rear on their hinder legs, the adversary with jaws distended, and th teeth and heels with the greatest m." — *Harris, 'Game and Wild Animals of South Africa,'* p. 19. It is called *Quagga* by the Cape Colonists, and y by the Bechuanas.

BU. The name given to the humped ies of oxen which are found in India he Asiatic Islands, and extend along astern coast of Africa to the Cape of Hope. They are used as beasts of o, and serve as articles of food, though s respect its flesh is by no means equal *of our domestic breeds.* The hump, *s chiefly composed of fat,* is regarded as a great delicacy. Zebus differ greatly in dimensions; some are of large size, while others, of which we have figured a female and young, are not much larger than a sheep;

ZEBU.

they vary in colour; the most common variety is of a light gray, passing into cream-colour. The Hindoos treat the larger breed with superstitious veneration. [See BRAHMIN BULL.]

ZEE-KOE. The name given by the Dutch colonists in South Africa to the Hippopotamus. [See HIPPOPOTAMUS.]

ZERDA. The name often given to the long-eared, dog-like quadruped called the Fennec. [See FENNEC.]

ZEUS, ZEIDÆ. A genus and family of Acanthopterygious fishes, remarkable for their compressed form; to this group belongs the JOHN DORY and the OPAH DORY (*Zeus Opah*) which latter is a very superb species, and inhabits the seas of warm regions, being only an occasional visitant of the Mediterranean and Northern seas. In size it exceeds every other species, measuring between four and five feet in length; in colour it appears to vary, the ground being sometimes a brilliant silvery green, and sometimes a bright gold-colour; but in either case the body is variegated on the sides with pretty numerous oval white spots, while the fins and tail are bright scarlet. The skin is apparently destitute of scales, and perfectly smooth. Two or three instances have occurred of this very beautifully coloured species having been taken on the British coast; one, which weighed between seventy and eighty pounds, was thrown upon the sands at Blyth, near Newcastle, in 1769; the colours and beauty of which are stated to "beggar all description; the upper part being of a bright green, variegated with whitish spots, and enriched with a shining golden hue, like the splendour of a peacock's feather." Another specimen was caught at Brixham, in Torbay, in 1772, which "weighed a hundred and forty pounds, measuring four feet and a half in length, and two feet and a quarter in breath: its greatest thickness was only four inches, and the general colour was a vivid transparent scarlet varnish over burnished gold, bespangled with oval silver spots of various sizes." [See DORY.]

ZEUZERA. A genus of nocturnal Lepidoptera, two species of which are found in this country, one of these, however, is extremely rare; the more common species, the Wood-leopard, (Zeuzera Æsculi) is white and

all hours, and no appearance of light was perceptible.

ZOOTOCA. A genus of small Saurian reptiles, in which is placed our pretty little olive-coloured Lizard, *Zootoca vivipara*. [See LIZARD.]

ZORILLA. A genus of carnivorous quadrupeds, closely allied to the weasels, of which a species (*Zorilla striata*) is found in South Africa.

ZOSTEROPS. A genus of Birds closely allied to the Warblers, and seemingly intermediate between them and the Titmice. A marked peculiarity of the species belonging to the genus is that their eyelids are surrounded by a narrow ring of snow-white feathers. The birds are all small, and

WHITE EYE.—(ZOSTEROPS DORSALIS.)

generally of a yellowish green or brown colour. They are found principally in Africa, Asia, and Australia. Our figure, copied from Mr. Gould's truly elegant work, represents the ZOSTEROPS DORSALIS or White-eye of the colonists of New South Wales; Mr. Gould informs us that in South Australia, New South Wales, and Van Diemen's Land this is the bird which is seen more frequently than any other species. In the forests and thickets it abound far from a welcome visitor in garden it does great damage to buds and every kind, though it is upon insect principally feeds; in its dispositi very familiar, often building its rearing its young in shrubs and bordering on the garden walks. T which is also figured in the cut, is beautiful structure, being of a rou cup-shaped form and composed grasses, moss, and wool, and most lined with fibrous roots and grasses; are of a beautiful pale blue colou song of this bird is very pretty and and there is no perceptible differenc plumage of the sexes.

Another species, ZOSTEROPS CHLOR also described by Mr. Gould, was f Mr. Gilbert in Western Australia; ticularly fond of figs and grapes, and to be seen in gardens where these f grown, in flocks as numerous as spa this country. It takes flies on the w the true fly-catchers.

ZYGÆNA. A genus of Chondropt fishes belonging to the Shark family once distinguished from all its mem the horizontally flattened head, tr in front, its sides extending transver the head of a hammer, whence the name of the species Hammer-headed Mr. Arthur Adams when on the east Borneo mentions a circumstance whi the extreme voracity of a species of One of these fish sprang from th seized a bullock's hide which was d the bows of the ship, (H.M.S. Sa and succeeded in tearing a portio off. He also mentions that when dred miles from Batan, a shark was with a partially digested pig in his which had been thrown overboard a chorage of San Domingo in that islan SHARK.]

The name ZYGÆNA is also applied naturalists to the pretty black and re gidous insects called Burnet-moth word Anthrocera however is now g substituted for it. [See ANTHROCERA

ZYGODACTYLI. The name some ornithologists to that order of which two of the toes are directed f and two backwards, the term Scansor however is more generally used; it the Parrots, Woodpeckers, Cuckoos, SCANSORES.]

A SYLLABUS

OF

PRACTICAL TAXIDERMY;

OR,

THE ART OF PREPARING AND PRESERVING SPECIMENS OF ANIMALS.

---

atus requisite for collecting and the VERTEBRATE ANIMALS of y are both few and simple.

LS.—A good single or double bar- the latter is preferable. A hoop- brass wire, about fourteen inches and furnished with a bag of coarse ive inches deep. About six inches at each end should be bent so as andle, or that it may be tied to the alking-stick; or if expense is no on, nothing can excel the com- g-net of anglers. A game bag is ite for our larger species; those r size may be conveniently carried e collector's hat or pocket, or in collecting box.

trong scalpel, such as is used by r cutting through cartilages, but he blade,—costs 1s. 6d.

of very powerful dressing-case e inches long,—at 2s. per pair.

of surgical dressing forceps, not seven inches in length, which is n they are usually made; hence- all call them neck forceps: their er pair.

ammer.

ur instruments may be fitted into wrapper for the pocket; and of eck forceps is alone indispensable; f old curling tongs is a tolerable and where economy is studied, and a slip of hard wood, half an and tapering to a thin edge at nity, will answer every purpose. se, there will be required, a pair nd another of cutting pincers for ermaker's awl, iron wire of vari- needles, thread, coarse cotton, and box containing arsenical soap, apothecary can prepare from the ecipe:

ar	- - -	2½oz.
e, powdered	- -	1 lb.
soap	- - -	1
tartar	- -	6 oz.
owdered	- -	2

"Cut the soap into very thin slices; put them into a pot over a very gentle fire with very little water, stirring with a wooden spoon; when dissolved, add the salts of tartar and chalk: take it off the fire, add the arsenic, and stir the whole gently: pound the camphor in a mortar with a little spirits of wine, and mix." * Mr. Waterton's solution of corrosive sublimate is very good and useful, but the arsenical soap is generally preferred. "To a wine-bottle full of spirits of wine, add a large tea-spoonful of corrosive sublimate; in twelve hours, draw it off into a clean bottle, dip a black feather into the solution, and if, on drying, a whiteness is left on the feather, add a little more alcohol. Spirit of turpentine will preserve skins, but its properties are somewhat evanescent; and any skin may be preserved from putrefaction, if it is thoroughly dried and kept dry afterwards. It is to protect it from the attacks of insects, that we apply one or other of these nostrums.

Mr. Goadby has prepared a solution, which, for preserving some objects in natural history, is even superior to spirits of wine. Take

Bay salt	- - -	4 oz.
Alum	- - -	2 oz.
Corrosive sublimate	-	4 grains
Boiling water	- -	2 quarts

well mixed, and the solution filtered.

Plaster of Paris (gypsum) is greatly superior to powdered chalk for absorbing bloody and oily matter in the process of skinning. A useful cement may be made by dissolving some isinglass in hot water, and adding the white of an egg.

COLLECTING.—The gun is the most powerful auxiliary in procuring specimens of our mammalia and birds; and did the nature of this little work permit, I would add a few hints about guns, and the best method of proceeding against wild birds. To the curious, I would recommend Col. Hawker's

* Swainson's Taxidermy, p. 78.

"Treatise on Shooting." Shot No. 5. is the best for general purposes, No. 8. for Thrushes, and dust shot for the smaller species: Eley's wire cartridges (Reds) are invaluable for coast-shooting, or wherever birds are difficult to approach. If a bird is wounded in the head, it is often difficult to prepare this part in a neat manner; therefore, in firing at a bird sitting on a tree, endeavour to aim so that his head shall be protected by a branch. By loading your gun thus,—pour in a full charge of powder, enter a wad into the muzzle, cover it with a single tier of shot, place another wad over all and ram home,—your shot will be economized, and the specimen less injured; it is a deadly charge at thirty yards. For small birds the charge of both powder and shot should be reduced one-fourth.

The death of a wounded bird may be speedily effected by severe and continued pressure on the region of the heart and lungs, with the thumb and fingers placed on opposite sides, and below the wings: a large bird may have his feet and wings confined by a handkerchief, and then the spinal cord may be pierced by a pin, where the bones of the neck unite with the skull. The throat should be carefully stuffed with cotton or tow; the clots of blood wiped off; the shot holes plugged with cotton; and, when cold, wrap the bird in a square piece of paper, beginning to roll at one corner, and finish off by twisting the ends together. When mice or shrews are taken for stuffing, it is best to wrap them in a handkerchief, and drown them in water. Before setting out on a shooting excursion, provide a clue of twine, and should a bird fall into the water, tie the cord to the middle of a stick, three feet long, or to your ramrod, and throw it over the bird, which you must endeavour to entangle with the cord, and so pull it ashore.

Gamekeepers, warreners, market gardeners, and poulterers may all be advantageously employed in procuring specimens; and bird-catchers also, for such parts of the plumage of birds as may be soiled with bird-lime can be restored on being washed with spirits of wine:

Aquatic reptiles, and a few of the smaller freshwater and marine fishes, are best taken with the hand net, such as has been described in the proper place.

To procure Marine Fishes:—Make frequent excursions to the fishing grounds in person, and frequent the fish markets at an early hour. You will find it a good plan to induce fishermen and fish-curers, by making them suitable presents, to bring you *desiderata*.

SKINNING AND MOUNTING QUADRUPEDS.

Lay the animal on its back with its head from you. Plug up the nostrils and stuff the throat with cotton or tow. Divide the hair in a straight line stretching between two points, one situated between the fore legs and the other near the tail; make an incision along this line with the scalpel, knife, or scissors. Turn the body with its side towards you; raise the skin on the breast between your fore finger and thumb, and by means of your fingers and the handle of the scalpel, or its substitute, the mesh of hard wood, separate the skin from the body as far as you can reach, only using the blade of the knife where it is absolutely necessary, and stuffing in cotton or paper to keep the hair clean. Take especial care not to cut the thin membrane which covers the intestines; push forward the hind leg, and divide the first joint which comes in view, leaving the thigh bone attached to the body. Do the same on the other side. Finish off the posterior extremity of the body, and separate the tail. Turn the subject on its breast, and skin along the back: separate the fore leg at the lower joint of the bone which is united to the lower part of the shoulder-blade by its upper extremity; wrap the carcass in paper to keep it from soiling the table, and push rather than pull the skin over the neck and skull, cutting out the ears and round about the eyes with great care. Cut off the neck close to the head; scoop out the eyes; extract the brain through the opening left by the spinal cord; cut off all the muscles, and clean the bones thoroughly. The legs are next pushed inwards and cleared of their muscles as far as the roots of the toes, and the tail skinned as far as practicable; the skin is next cleared of every particle of fat and muscle, and the shot-holes stopped up.

The general principles on which quadrupeds are mounted may be concisely stated. Take a wessel which has been skinned as above: provide a quantity of iron wire considerably less than a crow quill in diameter; heat it till it is red hot, and cool slowly: it will then bend with facility in every direction. Divide the cork of a wine bottle equally and longitudinally, and connect the two pieces by means of a piece of wire nearly equal to half the length of the body of the vessel, measured from the fore part of the shoulder-blade to the root of the tail. Prepare a piece of wire pointed at both ends, equal in length to the neck, the height of the skull, and allowing one and a half inches for its insertion into the anterior cork and projection beyond the head. Do the same with the tail wire, allowing for its insertion only; and with the leg wires also, making liberal allowance for their insertion, not only into their respective corks, but also into the board or stand for the specimen: these wires should be sharpened at both ends. The space intervening between the corks should be rolled with tow, and in like manner an artificial neck of the same material on its appropriate wire. Anoint the orbits with soap, stuff with cotton; and after a liberal application of the soap to the skull, its skin and that of the neck, the head is carefully restored to its natural position, so as to stretch it as little as possible. The legs having been anointed, are restored to their natural position; and the wires having been entered in the ball of the foot, are placed behind the bones of the leg and bound to them with pieces of thread. The artificial body is then placed in position, the neck wire is thrust downwards through the anterior part of the [illegible] the point caused by the wire forming [illegible]

ork: the wires of the legs are secured
ide in like manner, and lastly the
Pledgets of tow are then worked
ns of a thin broad-pointed piece of
ich is sometimes called a stuffing
ifferent points of the skin are thus
d others depressed, by the fingers
erator; the neck is adjusted, and
if necessary, by seizing the project-
of the neck-wire and pressing the
nwards; the body curved according
taste and the position which the
o assume when finished: and thus
ter goes on copying nature carefully
espect till the skin is sufficiently
is then neatly sewed up, always
he point of the needle outwards,
ling the entanglement of the thread
roots of any of the hairs: holes are
a piece of wood, their position hav-
first properly ascertained, the wires
through, and their points secured
cut in the board. The ears are
sted; the head and upper part of
finished off, by raising the skin on
of a stout wire inserted at the eyes
outh, and readjusting it with the
d supplying small pledgets where
. The orbits are furnished with a
y or cement, for the reception of
eyes; which can be purchased at
of professional bird-stuffers.
hat has been stated it will be easy
a frame-work of wire suitable for
a larger animal; but, after all, I
rnestly beseech all who aspire to
more rational than mere collect-
ntent themselves with the stuffed
uadrupeds and birds; no true natu-
he present age ever thinks of form-
her collection for purposes of study.
er method is expensive and cumber-
ilst the latter is in every respect
renient, more economical of money
, and above all in the expenditure
s time which can never be recalled.

SO AND PRESERVING BIRDS.

skinning a bird, the young operator
st ascertain the position of the ears
es of the head, of the bare space on
of the lower part of the neck, and
in which the secondary quill-fea-
nserted over that part of the wing
omposed of two bones, correspond-
those in the human arm lying
he elbow and wrist joints.
ge bird having a tough skin should
for the first essay; and none is
n the Rook. Lay the bird near the
e table, and with a hammer break
one of the wing at a point adjoining
ler-joint. See that the throat has
erly stuffed; and if an eye has been
the shot, scoop it out if possible;
ff it up with cotton, for the dis-
blood and humour will greatly
he skin. Divide the feathers along
tching from the fore part of the
e breast-bone to a point near the
k off the down, and make an in-
the knife or scissors; raise the
skin and separate it from the muscles as far as the shaft of your scalpel can reach, stuffing in cotton as you proceed, and sprinkling some gypsum over any blood or oily matter that may appear; when dry, the gypsum breaks off on giving a slight tap with the finger. Be careful in skinning over the abdomen, and let it be a golden rule to stretch the skin as little as possible. Push forward the leg and separate it from the body at the first joint that is visible, leaving the thigh-bone attached to the body: then treat the other side in like manner. After this, finish off the posterior parts; put the fingers of your left hand below the rump, raise it slightly, and feel with the thumb for the point where the set of bones over which the tail-feathers are inserted unite with the adjoining vertebræ; and having ascertained that, use the knife with confidence, yet with becoming caution. Lay the bird on its breast, and push the skin along the back; and as the long bones of the wings were broken, the latter readily accommodate themselves to their new position: separate them at the point of fracture; wrap the body in paper, and push the skin along the neck and over the head, giving special heed to the ears and eyes, as in the case of quadrupeds: then sever the neck where it joins the head, which must be cleaned in like manner; with this difference, however, that the scissors must be used to cut out a portion of the back part of the skull, and a large part of the palate, to make room for the artificial neck as it is fixed by the neck-forceps. Fill the orbits with cotton, anoint the skull, the skin of the head, and neck with arsenical soap, and restore the head to its natural position. Take hold of the bone of a wing, keep its under side uppermost, and push the skin along with your left thumb; and on coming to the quills, insert your thumb below the barrels of the quills, so as to prize them forwards and downwards (presuming that the bird is lying with its head from you). It is not necessary to skin beyond the anterior joint of these two bones over which the quills are inserted; cut through all the muscles at this point, and taking them between the knife and your right thumb, tear them upwards, cut them off, and then amputate the shattered bone at the joint, to which you must fasten a piece of strong thread about six inches long: restore the wing to its natural position after applying the soap, and smooth and adjust the ruffled plumage. Go through the same operations with the other wing; push in the legs, and cut off all the muscles to the first joint, beyond which there must be no skinning. The base of the tail must next be attended to; but avoid cutting too closely, else the tail feathers will fall out: remove every particle of muscle and fat from the skin. If the subject is a sea bird, the task will be simplified by applying spirit of turpentine with a brush, which will dissolve the fat, and this again may be absorbed by gypsum liberally applied, and when dried it is cleared away; the skin is then ready to receive the soap.

The best point in a well-preserved skin consists in having the head prettily dressed

off, the neck short, the plumage neatly disposed, and the whole form compact and moderately full; and I know of no more effectual method for attaining these ends than the following rules:—Take a pledget of well-drawn tow, somewhat longer than, and yet proportioned to, the size of the neck of the bird; take it by one end on the neck forceps, push it up into the skull, into which it must be pressed as firm as possible; and the head is dressed on the point of the forceps, and completely finished off as in the case of the weasel: withdraw the forceps, and push up a similar but much smaller pledget into the back part of the mouth and between the lower jaw: by means of these the neck may be shortened at pleasure. Then place a small pledget along the back; draw in the wings, adjust their position, and tie them with the threads within a quarter of an inch of each other, in the case of the sparrow; and other birds in proportion. Bring forward the tarsal, or, as it is popularly termed, the knee-joint, so that it shall be somewhat in advance of the root of the tail. Take a good pledget and press it firmly over the head of the wing-bone, and under the head of the leg-bone; do the same on the other side (this is an important operation, and should be well done); add some more pledgets if necessary, and bring down the end of the neck-pledget and press firmly; the lesser neck-piece follows, and then it is ready for sewing up.

By attending to these directions, it will be found that the body so formed is firm and yet very elastic; and it is this latter property of tow that makes it superior to cotton for such purposes; yet cotton is best for stuffing into the orbits, and for keeping the feathers clean during the operation of skinning. It will be observed that the bodies of birds taper away towards the tail; let this be kept in view when stuffing a skin. Take a needle and strong thread, and for a sparrow give three stitches along each side of the incision, stitching always *from* the inside. Draw the edges close and cut the thread, leaving about two inches hanging from the bird. It is quite unnecessary to fasten the thread, or even to cast a knot on it, and the stitching need not come lower down than the posterior margin of the breast-bone. Care must be taken not to entangle any feathers by the roots; but should this happen, the refractory member must be pulled out, if it will not keep in its proper place. Wherever the plumage is disordered, it should be stirred up with a pin, and dressed with the fingers: if the neck has been wounded by a shot, then the damaged part should, if possible, be covered by giving the head and neck a slight twist to one side; and when all has been adjusted to your liking, take a slip of paper proportioned to the size of the bird, make a suitable belt, confined by a pin, and just large enough to confine the wings; put it over the skin, and see that in doing so the plumage is not disturbed. These are the dimensions of a belt for a sparrow: 3½ inches in length, and ¾ inches broad; diameter of the belt 1¼ inches. Tie the legs crossing each other, the right uppermost if a male, the left if a female. Affix a card label to the right tarsus, so that it shall lie across both legs; the generic and specific name and sex should be written on one side, the locality whence procured, the date, and a reference to your note-book on the other side.

To ascertain the sex of a bird, make an incision over the loins so as to see into the abdomen; thrust aside the intestines near the backbone, and there will be exposed two white glandular bodies if a male, or an ovarium containing rudimentary eggs if a female. Press the tail upwards and expand it properly, and pull out the neck if it is too short; but if too long, it cannot be shortened in any way. The skin should now be laid out on cotton to dry. To remove soiling matter from the plumage, wash with a sponge dipped in cold rain water; mix common starch and cold water to the consistency of thick cream, lay a coating of it about ⅛th of an inch thick over the part to be cleansed, and after the lapse of 24 hours remove it with a few taps of the finger (the skin should be dry before doing this): it is well adapted for cleansing old mounted specimens.

Birds such as Ducks, whose heads are too large to admit of the skin passing over them, should have their necks severed about three inches from the head; and if the bird has a black throat, then an incision sufficiently large to turn out the skull must be made longitudinally; but if the upper part of the neck is of a dark colour, or if the bird has a crest, then the incision should be made there. Sea birds having white breasts and black backs should be opened down the latter, and birds which are perfectly white should be opened under the wing. Long-necked birds, such as Herons, should be preserved with the neck slightly curved, to take up less room in packing. Where it is desirable to pack as many birds as possible into little space, the stitches may be cut, the stuffing (of the body, only) extracted, and the skins pressed quite flat. They may be prepared for being re-stuffed by being wrapped in a damp towel, till they become pliable; and this may be practised should a skin become too dry before it is stuffed. Should the collector ever be pressed for time to skin a bird—make the longitudinal incision, separate the skin from the body as far as possible, stuffing in cotton, and sprinkling powdered charcoal over the abdomen, and lay it aside in a cool dry situation.

MOUNTING.

To mount a bird's skin, prepare wires for the neck and legs as for a quadruped, and an artificial neck of rolled tow on its appropriate wire; take a handful of straw well drawn, tie a string firmly around it so as to form a standard for the insertion of the wires, but considerably less than the body of the bird. The wing-bones are tied at a short distance from each other; the wires for the legs are run up along their posterior edge, and fixed, take care, [illegible] after the neck has been properly adjusted. The

standard is then taken between the finger and thumb of the left hand, and pledgets of tow are worked in with a piece of pointed wood; the more prominent parts are reduced by pressure, and the hollow parts are pushed outwards with the stick. By and by, the bird is laid on its back on the table, and sometimes held by the feet till it has been filled to its natural size; it is then sewed up and stuck on its perch; the legs and neck are beat into their proper position, all deficiencies in the stuffing of the head and upper part of the neck are supplied through the channel of the mouth or eyes; the wings adjusted and kept in their place by a pointed wire on each side run into the standard, their tips confined by a bandage, the tail supported on a piece of wire bent in a serpentine form, and the whole plumage neatly dressed. Such is a very concise outline of *one* method of mounting birds, which in the hands of a skilful workman never fails to produce the happiest results. Other methods are detailed by Captain Brown. The tyro's greatest error consists in over-distending his specimens, and in keeping their legs too upright; but a careful study of the living models, and a little practice, will enable him to make satisfactory progress. However beautiful the art may be, it is to the true naturalist scarcely worth the expenditure of the time requisite for its acquirement and subsequent practice.

NESTS AND EGGS.

All that is requisite in forming a collection of birds' nests is to dry them properly, and to secure those of loose texture by a few stitches with a needle. To preserve *eggs* for the cabinet, make a hole at the sharp end of the egg, and a smaller one at the larger end; blow the contents through the larger hole: dip a camel's hair brush into a solution of corrosive sublimate, and press it against the smaller end of the egg, so that some of the liquor may reach its interior, then shake the egg, and allow it to drip. Eggs are best kept in open card boxes amongst chipped moss or on cotton.

PRESERVING REPTILES.

Snakes and Lizards may be divided longitudinally, and their skin glued to a piece of pasteboard and then varnished; but they are best preserved in wide-mouthed bottles amongst spirits. If large, an incision ought to be made in the abdomen to allow the spirit to penetrate readily into the intestines, amongst which putrefaction would otherwise take place; and this is also the sure result if the specimen is allowed to come in contact with the sides of the vessel; hence the propriety of suspending it by a thread from the cork, which must be covered with several layers of bladder and one of tinfoil, and either painted or varnished. But amongst water reptiles, the skins of the Frog and Toad may be preserved thus: Cut out the whole inside of the mouth with a pair of scissors, separate the first vertebra *of the neck from* the skull, *raise up the jaws, and push* back the skin *with one hand, whilst the other* pulls the body in a contrary direction; and thus the whole carcass is drawn out at the mouth. Restore the legs to their natural position; fill the skin with dry sand; stop the mouth with cotton; when dry, give a coat of copal varnish, and dry in a draught of air; and by making a small incision in the lower part of the body, the sand will readily escape.

SKINNING AND PRESERVING FISHES.

To preserve the delicate scales and evanescent colours of many species, wrap every specimen in tissue paper as soon as it comes to hand. Specimens for examination are best preserved in spirits, with a label of block tin or lead, having a number cut or engraved on it, and referring to your note-book, attached to each specimen. But a very neat collection of our fishes may be formed on the following plan, which was invented by Dr. Parnell of Edinburgh. The fish is divided longitudinally, so as to preserve on one side the skin and fins in an entire state, also the dorsal and caudal fins: begin at the head, and work downwards to the tail, removing the skin carefully; the coating of tissue paper will greatly assist the operator; and when the skinning has been effected the paper can be removed, after being damped with a wet sponge: reduce the bones of the head, thin down the base of the fins, and anoint the whole with arsenical soap. Take a sheet of pasteboard larger than the fish itself, and covered on one side with stone-coloured paper: sew the skin by its lower edge to the pasteboard, using a fine pointed saddler's awl as a piercer; then stuff in chopped tow till the skin is filled to its natural size, sewing the upper margin to the paper as the work proceeds, from the tail to the shoulder, and glue the head to the pasteboard. The fins may be supported in their natural position by means of slips of paper gummed to them, and these may be removed after the skin is dry, by wiping them with a damp sponge; then two or three coatings of copal varnish are given to the skin; and this finishes the operation. The scientific name should be printed or written in the left hand corner of the card below: the skin may be simply glued to the pasteboard, and then varnished.

SKULLS AND STERNA.

To prepare skulls and sterna of birds, which are very interesting objects for the cabinet. Remove all the flesh from the bones neatly and carefully, so as not to injure their natural character by scraping or cutting their surfaces with the knife; then put the skeleton into clean water, in which a little salt has been dissolved, till such time as the blood has been extracted from the bones; and, in order to whiten the preparation, it may be next put into a very weak solution of chloride of lime and water for twelve hours, and then again into cold water, after which it should be dried in a draught. As the bones of most sea-birds are very oily, their first bath should contain a little soda in so-

lution; and holes should be drilled in the larger bones to admit the water into their interior.

The curious windpipes of the Mergansers, and certain Ducks, should be steeped in a little salt and water, and then pinned to a board to dry; and when dry, give a coating of copal varnish.

Preparations of the gullet, crop, and stomach of birds, throw a beautiful light on some of the principles on which the proper classification of these interesting creatures is founded: Having skinned a bird, and removed the breast-bone so as to expose the internal organs, tie up the intestine where it leaves the stomach, cast a running noose over the upper extremity of the gullet, insert a blow-pipe or any other tube, tighten the string, and, when the whole is properly inflated, slip the noose suddenly over the end of the tube, and secure the passage with a firm knot: hang the preparation up to dry, and finish off with a coating of copal varnish.

If the carcass of a small animal is baited with honey, and laid near the nest of ants or wasps, the bones will be beautifully picked.

Cabinet.—Let the young collector content himself with such accommodation as an old chest of drawers can afford, or an old trunk, fitted with movable wooden trays of various depths, having a piece of leather or tape nailed at either end instead of handles; and, when he requires to procure a cabinet, let it be neat, plain, and portable: better have two small movable ones, than one fixture.

We come now to consider the principles and practice of the art of preserving the animals belonging to the second great division of the animal kingdom, termed *Invertebrata*, by systematists, from the circumstance of its members not being furnished with a backbone.

CRUSTACEA.

In the Lobster, Crab, Shrimp, Sand-hopper, Centipede, and Wood-louse, or Sciater, as it is called in the north, we have familiar examples of this class.

Apparatus.—A water-net, such as has been formerly described. A pair of forceps, 4½ inches long, such as any tin-smith will cut from the refuse of his bench; a few bags of cotton cloth to secure the more formidable species. A wide-mouthed phial, 2½ inches high, and 1½ inches in diameter, fitted with a cork stopper, secured with a piece of thin brass wire twisted round the neck; by this simple contrivance, the cork may be started or adjusted with the thumb of the left hand: it should be filled with some spirituous liquor.

Collecting.—Fishermen (especially oyster-dredgers and fish-curers), nay, even cockmaids, must all be employed to cater for the collector, for many a curious crustacean is found in the stomach of fishes. The larger species are best transported in bags, and suffered to die slowly in cold fresh water. The smaller species die readily in spirits.

Preserving.—The bodies of Lobsters should be pulled separate from the kinder parts; all the internal organs scooped out, then anointed with soap, and joined together with cement: the feet are properly arranged, and the organs of the mouth properly displayed, and retained in position, by means of pins stuck into the board. With a triangular-shaped awl drill holes in the under sides of the claws of crabs, and extract the flesh with hooked wires; the back shell is pulled separate from the body, the internal organs removed, and soap and corrosive sublimate liberally applied; it is then set after the fashion of the Lobster, and dried in a draught apart from the sun's rays. The smaller Crabs, Shrimps, &c. may be laid within card trays, which are made thus:—"Parallel to the four sides of the card, a straight line is cut by the point of a penknife, sufficiently deep to admit of one-half of its substance being cut through, and folded back without difficulty; the space between the edge and the cut line will, of course, constitute the depth of the box, and may be varied according to the fancy of the collector, or the nature of the specimens it is to hold; when these four sides are cut, the corresponding corners are taken out by the scissors, and the sides bent up and united by pasted slips of paper."* The bottom of the box should be covered with paper of a stone colour.

The smaller species of crustacea should be transfixed with a pin, or gummed upon slips of card, as in the case of minute insects.

INSECTS.

Apparatus.—Authors have given a long list of nets and other articles requisite for the collector; but, in reality, they are few and simple; and such can be readily procured or constructed at a small expense even in the country. A brass hoop net, already described, and fitted with three bags, one made of cotton cloth, 14 inches deep, for sweeping; another of similar size, of coarse canvas, for water insects; and the third made of a green gauze veil, having a depth equal to two and a half times the diameter, for collecting all winged insects. A wide-mouthed phial, that can be put into your waistcoat pocket, like the one already described for the crustacea, and containing spirits. Another pocket phial, having a quill inserted into, and projecting an inch below, the bottom of the cork, to prevent the escape of the small insects, which are generally soon suffocated by the fumes from the bruised laurel leaves and camphor, which should always be placed in it, as well as a few bits of blotting paper to prevent the insects being too much shaken. Pill boxes of various sizes, at 2s. 6d. per gross of twelve dozen: number them from No. 1. upwards on the lid and the bottom of each box to prevent confusion. Quills, or the young shoots of the elder tree peeled and dried, fitted with a plug of cork and wax at one end, and with a cork at the other. A pocket collecting box made of tin, on the principle

* Sandmann's Taxidermy, [illegible]

ckgammon board, so that when both shelves will lie flat on the lined with cork three-sixteenths ch thick on both sides, and covered per, having columns ruled on it nbered, that the collector may take his captures. A supply of the leaves of the common laurel, con- a gauze bag is pinned into a corner; dy box of pasteboard or light wood equally well, or one may be con- of pasteboard on the principle of trays, having a piece of linen cloth hind in place of hinges. To glue ally upon tin, the surface of the latter chipped with the point of a nail; e glue with a brush, and then strew d over it; when dry, pour off the rticles; give another coating of glue, one on the cork, and press it down y heavy weights equally distributed s thoroughly dry. A pincushion several folds of flannel secured be- o cards, and affixed to the inside of on the left breast by means of two sing over two little buttons. A high-shaped snuff-box is very con- for carrying a few braces, and three little pill-boxes a-field. A pocket g-box, for caterpillars, of any con- shape, having its sides pierced with in is the best for several reasons; it est, lightest, and, above all, the or such a purpose; but a large pill- ed with red-hot needles will do very n ale-glass or tumbler with a gauze d a little black earth from a hollow he convenience of such caterpillars ergo their metamorphosis below forms a convenient breeding-cage. rticular description of Mr. Stephen's -cage, and much that relates to the g and preserving of insects, I beg to e inquirer to 'Insect Architecture cellanies,' p. 224., one of Knight's Series: the woodcuts will easily im to comprehend many of the de- s given in this little treatise, in the ion of which the author has been to avoid all unnecessary expense.

r of short tin forceps, already de- nder the head of crustacea, for seiz- ts; a wet finger and thumb is readiest, n superior, especially for small in- The pocket knife and a lens of three ing powers ought to constitute part turalist's daily equipment: a single s. 6d. will show wonders, but a Cod- or Stanhope lens is indispensable l insects.

tern, 5 inches in height, and about square, fitted with a lamp to burn tl oil, and having a polished tin and bull's-eye glass, is most suitable ing; a good one will cost 4s.: it e furnished with two straps, one for t, the other for the neck. A small f the wick should always be cut off to relighting the lamp.

-The best kind of *pins* are the solid *ins sold by Edelsten* and Taylor, *urt, Cheapside, but Insect* Appara- tus of every kind may be procured at Messrs. Knight's, Foster Lane, London.

Damaged needles, or, as they are generally called, cabinet makers' needles, are most useful for setting insects; so are any tall pins, a proportion of which should be sharply bent to one side with the wire pliers. To form a setting stick, take a needle between the pliers, and push its head into a stick 5 inches long, about as thick as a small quill, and secure it with a silk thread well waxed; the other end is fitted with a small camel's hair brush. A pin bent at the point and fitted into a handle is also very useful for setting insects. Braces which are generally of a triangular shape, of various sizes, and transfixed by a needle or pin at the broader end.

A Setting Box should be formed of deal three-sixteenths of an inch thick, 12½ inches high, and 9 inches square; the top, sides, and bottom are entire, and to insure stability the latter ought to project half an inch beyond either side; coarse gauze is nailed on the back, and the door is merely in frame and also covered with gauze; thus providing for the ready admission of the air and the exclusion of dust. There should be two little rings and staples on either side to serve as handles, and a drawer 1½ inch deep, subdivided into compartments for pins, braces, &c.; it is situated close below a false bottom. Each setting board is covered with cork and then papered, leaving a margin equal to three-eighths of an inch all round; and the boards are placed an inch and a half above one another: this will give five to the box described, and they are fitted into grooves in the sides. But all this may be done much more cheaply; fillets may be glued on the sides to receive the boards, the drawer may be dispensed with, and a curtain fastened to the roof of the box, so that it may be folded up when necessary, which will answer every useful purpose in place of a door.

A stand for placing insects on to be examined, may be formed by gluing a piece of cork on one end of an empty cotton reel. For mounting insects on cards, gum tragacanth is superior to gum Arabic: to five table-spoonfuls of cold water, add a piece of gum the size of a shilling. A bottle, fitted with a glass stopper, containing oxalic acid: A tin box, 5 inches long, 3½ inches broad, by 2½ inches high, fitted with cork on the lid, and having a movable bottom of tin pierced with many holes, resting on points soldered to the sides, six-eighths of an inch above the fixed bottom, the space between them being reserved for bruised laurel leaves; any convenient little box fitted with a pasteboard tray may be substituted.

Every collector should be content with store-boxes till his collection has become extensive: handsome boxes of this description can be purchased for 10s.; but any carpenter can manufacture plain yet useful ones, of half-inch deal, after the fashion of a backgammon-board, in two equal halves, so as to hold insects in each. Dimensions in the clear, as follows: Length 17 inches, breadth 14 inches, depth of two halves when closed 3½ inches. The inner and upper edge of one half is furnished with a fillet of about

fitting into a corresponding groove in the one opposite, so as to exclude dust and mites; a piece of stout linen cloth is glued on the back to assist the little hinges, and the sides are secured by a pair of hooks and staples. The ordering of a cabinet is a very serious matter. 'Ingpen's Instructions for collecting Insects,' price 3s. 6d., should be consulted for this and all that relates to the whole subject of which it treats; and even after studying this work, the entomologist should seek the advice of some experienced friend, and the workshop of a clever tradesman. Order a quantity of rough cork; glue it to a board, and send it to be cut up into slices, one quarter of an inch thick, at some saw-mill where *veneers* are cut; then smooth down the surface of the slices with a large wood file, and polish with pumice-stone from a painter's shop: a sheet of paper is then accurately fitted into the bottom of the box, and the cork cut to the pattern, and glued into its place, where it is secured by a few wire nails and heavy weights, equally distributed, till the glue is thoroughly dry. Cut a sheet of stone-coloured paper to the dimensions requisite for covering the cork; cover the former with flour paste on the under side, and allow it to be well saturated before laying it down; smooth its surface with a cloth, and dry in a cool place. Previous to pasting down the paper, fill up all the holes in the cork with a composition of equal parts of tallow, resin, and bees'-wax; this may be melted on a large scale in an iron spoon, such as plumbers use, and poured into a box to the depth of one quarter of an inch; it is an economical substitute for cork, though not equal to it. The author has seen American pine-wood so very soft, that a stout insect-pin might be stuck into it, without being bent, and it possessed considerable elasticity for retaining the pin; but the best substitute for cork with which he is acquainted is 'Baldwin's Improved Elastic Gun Wadding,' No. 2., which can be purchased from any gun-maker at 9d. per sheet. Soak it in water for eighteen hours, and when thoroughly dry, glue it into the box, and lay heavy weights over it for two days or so, and then cover it with paper: but the most economical method of preparing an insect store-box which can be devised is, to cover the bottom with paper, and glue small chips of cork, about a quarter of an inch thick and of sufficient size merely to hold the point of a pin. To cut cork, the knife or saw should be wiped with a cloth moistened with oil; but as oil spoils the paper, its injurious effects may be neutralized by the application of a little spirit of turpentine. Where it is inconvenient to send cork in its rough state to the saw-mill, it should be cut into strips about three inches broad; fix them in a vice, and with a fine cabinet maker's saw, cut them into slices about a quarter of an inch thick; glue each piece, worst side down, on a sheet of brown paper of the required dimensions laid on a board, and drive a few wire nails through each piece, to keep all firm until the glue be dried; reduce all irregularities with the file, and polish with pumice-stone.

To prepare glue for use, break the cake into small pieces, and soak for twenty-four hours in cold water; pour off as much of the water as you think will leave sufficient to make a solution of glue strong enough for your purpose; boil over a brisk fire, stirring frequently.

General Remarks on Collecting Insects.—Insects are always most abundant in that district which enjoys a warm, equable temperature and a dry and kindly soil; but the greatest variety will ever be found in that which possesses a great diversity of soil, and consequently a rich flora. In the woods, the oak, elm, poplar, lime, willow, birch, and hazle, and the sallow and Scotch fir when in flower, are the most prolific trees; nor must the lichens, which clothe the trunk of the old tree, and the lowly mosses, which clasper at its root, be forgotten. The agarics and fungi which gladden our eyes in the late autumnal walk, and the stony-hearted *Fungus Boleti*, which foretels the destruction of the proudest member of the forest, each and all yield a rich harvest to the collector. Hedgerows, not the gaunt mathematical hedges of Scotland, but the broad free-growing hedges of "merrie England," with their multifarious denizens, the hawthorn, the sloe, and the rambling woodbine; hedge banks, ditch banks, forest glades, commons, lanes, heaths, and marshes covered with long waving grass, rank vegetation, and gaudy wild flowers; and amongst the latter, the various tribes of buttercups, hemlock, and thistle, are the choicest, whilst the despised nettle is most prolific in a multitude of species. Stones must be upturned everywhere, bark scraped off trees, and all decaying timber carefully explored. All organized matter going to decay, whether dunghills, the droppings of cattle, or the dried hollow stems of plants, dead animals on dry land or by the sea-shore, the sweepings of granaries, cellars, bakehouses, and the scrapings of sheep-folds; lakes, pools, and rivers contain many peculiar species; hence I may conclude with this dictum,—"Search everywhere."

Few insects are stirring during winter; but ponds should be dragged, the bark of trees and rotten wood explored, mosses and lichens carried home in bags for examination, by shaking them over a white plate. Dig some inches deep at the roots of trees for pupæ in the months of January and February. Many more water-beetles will be found in spring. Search below shores, on well-trodden pathways, and sunny banks, and by the margins of pools, stamping violently on the ground, to disturb such as are lurking there: throw tufts of grass and the dung of herbivorous animals into water, and the insects will rise to the surface. Bees and two-winged flies haunt most of our early flowers, especially the sallow and sloe-thorn amongst trees. At all seasons look on the north sides of trees, gate-posts, and palings, for moths in a state of repose.

In summer, insects may be taken in greatest abundance from two or three hours after sunrise till nearly [illegible]. Their relative abundance is much influenced by the [illegible]

ther; they delight in warmth; and the close heavy atmosphere which precedes a thunderstorm is peculiarly grateful. There are a few moths which fly by day; most of them fly at an early hour in the night, and again before sunrise. Many a rare beetle of darkling habits will reward the wakeful collector, who will sweep in likely places, putting the contents of his net into a good-sized bag tied at the mouth: this period, then, is the collector's harvest. Autumn likewise has its rarities, especially amongst the moths, and certain lively tribes of two-winged flies of parasitical habits; but with the advancing season many an old familiar form disappears, and in the languid movements of others, which were once the very types of animal enjoyment, the approach of stern winter is no less certainly foretold, than by the fading and falling leaf.

He is a sorry collector indeed who cannot make the most of every opportunity for adding to his stores that may occur; to knock down an insect with his hat or pocket-handkerchief, to seize and transfix it before it recovers from the shock, and then to pin it into the crown of his hat; to form a paper *twist* for a second, and a box made from the hollow stem of some of the hemlock tribe, with a paper stopper for a third: but a phial containing some bruised leaves and crumpled blotting paper, a collecting quill or two, and a few small pill-boxes, fitting the one within the other, should constitute part of the daily equipment of every collector. He will make most progress if he confines his attention to a particular order throughout the season, or during a part only of a season: he should also choose a favourite locality where insects abound, for every day will probably bring some new species to light; but at the same time, he should ever be ready to capture a rare insect belonging to other than his favourite order, whilst by so doing he may confer a boon to science and gain a friend in need by a timely and acceptable gift.

Peculiar Methods of collecting Insects. Coleoptera. (*Beetles.*)—A white sheet spread on the grass will attract many species; others may be captured on walls and wall tops, and other localities already mentioned: the collector pushes the sweeping net before him amongst the grass, or strikes it from side to side, and up amongst the branches of trees; or these may be violently shaken, or beaten over a piece of cotton cloth spread below, or an open umbrella lined with cotton cloth, or the little net itself. The tin forceps are useful for seizing insects in crevices, or amongst a tangled mass of leaves and flowers in the bottom of the net; the largest sized beetles are put into spirits; the smaller ones, and especially the most brilliantly coloured species, into the collecting bottle.

Orthoptera. (*House and Field Crickets, &c.*)—Collected by the hand, or in the sweep-net, and popped into the collecting bottle.

Neuroptera. (*Dragon-flies, May-flies, &c.*)—*They are most easily captured during* dull cloudy weather, or at a late or early hour; they are transfixed in the centre between the fore wings by a pin, and placed in the collecting box, near the bruised laurel leaves, and the wings of Dragon-flies confined by braces: the latter are very tenacious of life; the May-flies die very speedily.

Hymenoptera (*Bees, Wasps, &c.*) and Diptera, or *two-winged flies*, are struck at with the gauze net, and secured by giving it a peculiar twist; the captured insect is then placed on the collector's knee, and confined by tightening the net over head, and held in that position between the fore finger and thumb of the left hand; a pin is drawn with the right, and the insect is transfixed in the thorax, and in the centre between the wings: the pin is seized by the point, the head is easily worked clear of the net, the insect is then pressed in the breast with the thumb-nail under the wing, and then placed in the collecting box.

Hemiptera (*Aphides* or *Plant-lice*, *Water boatmen*, and *Water clearers*) are taken by the hand or by sweeping. The aquatic species may be taken with the net in almost every brook and pond: according to their size they are either transfixed by a pin or placed in a bottle of spirits, or in the collecting bottle.

Lepidoptera. (*Butterflies* and *Moths.*)—The former have a chosen locality; hence their capture is in some respects pretty easy. They may be sometimes induced to stoop from their flight, and settle near a stone which has been thrown into the air before them. They are taken with the bag-net, seized by the thorax or breast, which is violently pressed between the finger and thumb, so as to stupify the insect; it is then lifted by the antennæ or feelers, laid on the palm of the hand, and transfixed with a pin. Practice will make the collector expert in handling the insects of this order, so as not to injure the delicate scales with which the wings are clothed. For moths, which are a very "peculiar people," he must resort to various flowers by night, especially those of the sallow, ivy, and, above all, the honeysuckle, in their season; also to those of the French marigold, fuschia, lobelia, pansy, jessamine, and mistletoe; and, amongst wild flowers, to the white bladder-wort, and the common bag reed, in autumn: some species are exceedingly fond of the juice of the berries of the yew-tree. Go to your hunting-ground just before the bat comes forth; kneel down near the flowers, having your face turned towards that quarter of the sky whence there is most light, and with poised net, and eye and ear attuned, await their coming. Having caught one, gather up your net around your captive; take a pill-box from your right pocket, and placing the lid between your lips, carry the box carefully past your left hand, holding the bag, and place it over the insect; confining the latter by pressing the box against the gauze till the lid is fixed, by slowly withdrawing the net from between the lid and the box, which is then placed in the

right hand pocket, where the full boxes are always placed, to prevent confusion. Moths are never pinned on the spot.

Within these few years, the inventive genius of our naturalists has pointed out several admirable methods of alluring moths to their certain destruction. In 'British Moths,' Naturalist's Library, page 102., it is shown what a powerful source of attraction a Sinumbra Lamp is, when placed in a room at an open window; and, again at page 105., it is recommended to provide an empty sugar hogshead, or a bee-hive besmeared outside and inside with the refuse honey, and placed on a forked stake four feet high. A lantern may be carried on a pole by a boy, in a dark wood, and the collector follows to strike at the inquisitive moths; but, above all, I must recommend the practice of boiling one pound of the coarsest and strongest-smelling brown sugar that can be procured, in some water, until it becomes a syrup, about as thick as molasses: before using it add a teaspoonful of fine old Jamaica rum (this is not indispensable) to a teacupful of the mess, and apply it liberally with a small paint-brush in a circle around the stems of trees growing on the skirts of woods, meadows, and in hedgerows, especially such as have a western aspect. Do this about sunset, and retire for some time; light your lantern, and approach the trees with caution, holding your net close to the stem to receive such moths as may tumble *dead* drunk from the tree, on your attempting to place a pill-box over them. The most astonishing results have followed the adoption of this method all over Great Britain, and I would earnestly commend it to the notice of all who have not tried it. Calm, warm, and dark nights are most favourable for "Mothing," but if the weather has been very hot for some time previous, and if honey-dew abounds, the moths will despise your ambrosial nectar, till the summer's rains have washed off their more natural food. In this, as in every other department of collecting, the young naturalist will meet with many disappointments; but perseverance is always commendable; and some lucky night will more than compensate for previous disappointments. When a moth is observed reposing on a tree or gate-post, place a pill-box over the insect, and then move the box rapidly from side to side till the insect takes refuge in its interior.

ON SETTING AND PRESERVING INSECTS.

Coleoptera (*Beetles*) are never pinned on the spot when taken; but whether drowned in spirits, or stupified in the collecting bottle, they should always be immersed in hot water to destroy any lingering sparks of vitality: they are then laid on blotting paper to dry, and the larger species are transfixed with a suitable pin through the centre of the right elytra or wing-cover. The pin is best worked into the body with a slight boring motion, or in the instance of certain very hard-cased insects, such as the larger Weevils, the point of the setting-needle should be used as a piercer for the more delicate pin, which is made to project below the insect, thus affording space for securing it firmly in the cork, and to prevent the legs of the specimen from touching the paper. The parts of the mouth should be displayed if possible, the antennæ well set out with pins, and the legs set out in a natural position to dry. All the smaller species that would be damaged by such treatment, must be gummed, from two to six in company according to size, on pieces of card about two-and-a-half-eighths of an inch in depth, by three-eighths of an inch in breadth; for two, pierce it with the setting-needle, and transfix it with a pin, leaving it at an equal height above the cork, with the larger specimens; having given the card a coating of gum, lift the beetle with the camel's hair brush on the setting-stick, hold it between your fingers, and after expanding its limbs and the parts of its mouth, place it boldly on the card, and transfer the whole to the setting-board. No insects should be allowed to remain longer amongst spirits than is necessary, for after a time maceration commences at the joints, and the limbs separate from the body; but where time is precious, dry the insects carefully on blotting paper laid on a setting-board, and deposit them in a pill-box: a hot water bath will fit them for the setting-board at any time. Should a limb break off, it should be immediately restored with a little gum water.

Grease. — When a thick-bodied specimen, like the Ghost Moth, becomes greasy, immerse it in spirits of turpentine; and then stick it on a bed of calcined magnesia till dry, when the magnesia may be blown off.

To kill Mites on Insects. — Take equal parts of oil of anise, oil of thyme, and alcohol; mix, apply a drop to the infected specimen.

Orthoptera. (*Crickets; Cockroaches.*) The larger species are pierced through the thorax with a pin, before the anterior margin of the wings; these are extended, and together with the limbs, are retained in a natural position until dry: like all other insects, too small for the pin, the smaller members of this order are gummed on cards of suitable size: they are killed by being placed over bruised laurel leaves, or dipped into scalding water. These remarks are equally applicable to the order Hemiptera (*Aphides, Water-clearers*).

Neuroptera. (*Dragon-flies; May-flies.*) The former are very tenacious of life, and must be killed by being pierced in the breast with a needle, dipped in oxalic acid, — a dangerous fluid, — which, if it touch any piece of furniture, or the operator's hands, must be neutralized, by being mixed with cold water. When dead, cut up the abdomen with a pair of fine scissors, extract its contents, and put in a small roll of blotting paper dipped in a solution of corrosive sublimate. This is the only way to preserve the colours unimpaired: the larger May-flies must be set in the same way, and the wings of both are extended, horizontally and confined with braces.

YMENOPTERA (*Bees* and *Wasps*) and (*Two-winged Flies*). The largest belonging to the first-mentioned e best killed by being pierced in the ith a needle dipped in oxalic acid; a smaller size, and our two-winged easily killed, by pressing smartly horax below the wings, or by the om the bruised leaves of the common but as these cannot be procured in uation, lucifer matches, or German nay be burned in any close vessel, a tumbler, or basin, inverted on a leather, or thick woollen cloth. The d medium-sized insects have their isplayed to most advantage, when confined till thoroughly dry, beages of card supported on needles, proper elevation: the size of the quired for a wasp will be, one pair, ths by four-eighths, and another and confining pair, four-eighths by ghths. The insects belonging to both re transfixed through the centre of ax, between the wings.

OPTERA. (*Butterflies* and *Moths.*)—ner may be killed by smartly presthumb-nail into the thorax below gs; and should this fail, bruised aves or oxalic acid will effect your

In setting, the wings should be well forward by placing the point setting-needle against some of the nervures near their base; and they d on a brace, stretching along their argin, and confined by smaller braces, ver this larger brace. The extremity domen should either be elevated or d, as may appear to be necessary, e brace; and the antennæ or feelers their proper place by means of ; but modern taste approves most of es being set on pieces of cork, having cut with a rat-tailed file for the reof the body, and the surface gently towards either side.

are deprived of life by elevating the e pill-box, and introducing a bruised eaf: the insect is stupified in the f ten or twenty minutes; it is then out into the palm of the hand, and ed with a pin through the centre of rax, which should be then pierced needle dipped in oxalic acid. Moths so be stupified with the fumes of tinder, or lucifer matches; but the e apt to injure the plumage of some

The larger species of Sphinx moths have their bodies dipped into scalding their wings being meanwhile held d; and the only way to preserve ick bodies is to slit them up, and their contents, putting in a roll of paper. In lifting moths, they should d hold of by the antennæ or legs, and re should be observed, so as not to he downy scales on their wings. In ing the smallest moths, the pin be made to incline forwards over eads, so that when it is stuck per*larly into the setting*-board, the *the insect may be* at once set by elevating, and then bringing them forwards. The larger species may be set after the fashion of butterflies with braces; but the favourite way with modern collectors is, to prepare cork cradles, which only differ from those already described for the butterflies, by being sloped behind, as well as towards either side, and the points where the different slopes meet are rounded off so as not to offend the eye; the groove receives the body of the moth, and the wings are brought forward and confined with small braces: this position is an unnatural one, but it is admirably adapted for displaying the beauties of these lovely creatures. The dissevered limbs of any insect should be replaced with a little gum. The best is gum-lac, dissolved in spirits of wine.

CATERPILLARS.—When one of these is taken, a supply of leaves from the plant on which it was found ought to be secured; and on reaching home, it should be placed in a box, or some suitable vessel, with a little black earth from a decayed tree, into which it may burrow, and some twigs, upon which it may perhaps affix itself before entering the chrysalis state, or amongst which it may spin its cocoon. Breeding cages for the Lepidoptera should never be without a twig, on which the new-born insect may mount and aerate its wings, which, without such a convenience, would be dwarfed in size, and of a crumpled shape. To preserve caterpillars for the cabinet, place them in distilled vinegar, or strong alcohol, for some time, till they become quite hard; then open them below, and stuff with cotton, and gum them on cards.

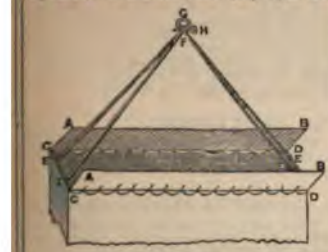
It is not necessary for a collector to set above three or four specimens for his own cabinet: duplicates of every class, after being dried, may be placed in pill-boxes, with a little camphor to keep off mites; but it is best to pierce each insect with a pin, and it may afterwards be relaxed by placing it on a cork in a basin of water, covered with a damp cloth. Messrs. Douglas and Stevens, in the Zoologist, page 1341., recommend that twelve young shoots and their leaves of the common laurel, or forty leaves of the same shrub, should be bruised in a coarse bag, with a mallet on a stone; place the bag in a jar, and stick the insects to be relaxed on the bag, and close the mouth of the jar with a piece of bladder; in about twenty-four hours, the specimens are fit for the setting-board. By this mode of treatment, mites and mouldiness may be destroyed from off all infected specimens. Again, a mouldy specimen may be saturated with spirits of wine, in which some camphor has been dissolved, and then dried in a warm place. Should a specimen become greasy, apply a little spirits of turpentine; if that is not effectual, scrape a little French chalk over it, expose the specimen to heat, and allow the chalk to remain for some days. As most collectors are careless about their duplicates, these should always be placed in quarantine for some time. Most insects will take about a week to dry in the setting-box in good weather.

half an inch apart, which is sufficient for the majority of our insects; but when a collection has been labelled, it is arranged in the following manner: the larger species of *Coleoptera*, *Orthoptera*, and *Hemiptera*, are arranged side by side, in pairs; and several specimens, according to their size, of the smaller species, in a greater number, in a row, and a single specimen with its wings displayed below each species. *Hymenoptera*, *Neuroptera*, *Lepidoptera*, *Diptera*: Insects belonging to these orders are arranged singly, placing the males first. Retain four specimens of each species of Butterfly; two males and two females, one of each set, in the natural way, and the other displaying the under sides of the wings. After what has been stated with regard to the mode of setting insects belonging to the various orders, it is easy to fix the relative width of the pencil lines defining the columns, by simply measuring the extent, covered by a pair of insects, or one insect, as the case may be; but, on the other hand, the width between the lines must be sufficient to receive the labels, which must be written or printed with the pen in a clear and distinct manner. Having ascertained these points, proceed to mark off the points of the columns with the compasses, measuring along two straight lines parallel to the upper and lower sides of the box (looking towards the hinges), beginning in each case at the left-hand side; then connect these points with pencil lines, using a correct square which fits the bottom of the box.

Labels are either written in a neat distinct hand, or printed with the pen on slips of paper. The name of the genus is placed at the head of the column, and that of the species below; both are transfixed with a pin through the centre, near the upper margin, so as not to hide the writing on the label in the least degree; somewhat in this style —

ANCHOMENUS, *Bonelli.* for the genus;

and these two plates are joined at their lower extremities, by means of two cross-bars, C C and D D, so as to form an angle of about 45° with the plane of this position; each bar is 5 inches in length, by three-and-a-half-eighths in diameter. The arms E F and E F are each 16 inches in length, by 3½ inches in diameter, and play upon the



BALL'S DREDGE.

cross bars by means of double swivel joints, as seen at E E and E E. Their anterior extremities at F are beaten flat, so as to meet closely, and vertically, and are pierced for the reception of the bolt H, which at the same time passes through the extremities of what may be termed the birdle ring G, to which the rope is affixed. The head of bolt H is pierced to receive the end of a little iron spike, for the better working of the screw; and at any time, by drawing the said bolt H and folding the arms inwards, the whole apparatus may be stowed away in a moderate-sized carpet bag; for its weight will not exceed 7 or 8 lbs., and the cost is only 7s. In no case should the bag exceed 18 inches in depth; one may be made of best twine, with meshes half an inch apart, and another of cheese cloth, or serge, for fine work. A raw hide, such as has been imported as a wrapper for bales of tobacco, or tallow, and which may be purchased in London for 1s. 6d., will make three bags of a most durable and efficient description, and they should have holes a quarter of an inch in diameter, cut with a punch, or simply stabbed with a knife, to facilitate the discharge of the water; and to save the trouble of canting the bag after it is drawn up from the water, there should be a slit five inches in length cut in the bottom, and laced with a thong. The strength of the rope required for Ball's Dredge must be regulated entirely by the depth at which it is employed; in all cases a 14 lb. weight should be attached to the rope six inches distant from the dredge.

Two or three moderate-sized sieves are required for sifting mud and sand; the height of the sieves may be 4 or 5 inches, and the meshes of their copper or brass wire bottoms should be one-tenth of an inch apart; by attaching *three strings which are held in the hand, the more valuable contents* of the sieve are readily exposed by repeated dippings in the water.

COLLECTING. — Our land shells may be taken in the greatest abundance during moist weather, or at morning or evening, creeping about pathways and old walls, in gardens, fields, woods, and heaths. Many species are taken by a careful search below stones and the bark of trees, amongst moss, and on various plants, by means of the sweeping-net; whilst the tin spoon and water-net readily procure those which frequent streams and ponds; but lakes must be searched either with the Gangui or with the Dredge.

For the marine species, the sea-shore should always be searched after a storm; shell sand, and the roots of tangle and other marine plants, yield many peculiar species, and so do the rocks laid dry at the recess of every tide, and on some parts of the coast the curious Pholades which burrow into rocks are pretty common, whilst the sandy shores also yield their peculiar species. A dimple in the sand points out the situation of the Solen or Spout-shell, and two little apertures that of the Tellina. Many fine species may be procured from the stomachs of fish brought to market, from the nets, lines, and traps of fishermen; but the dredge is the grand implement, which should be in the hands of every sea-coast naturalist. Having arrived at the fishing ground, ascertain the depth of the water, and the nature of the bottom, with a sounding lead; register these data, which are of the greatest importance, in a pocket journal; drop the dredge overboard, allowing one third more line than the ascertained depth, and drag the dredge along by sailing or rowing; when full let it be dragged into the boat. Let the Nudibranchiate Mollusca, Holothuriæ, and other soft animals, demand your first attention; make a sketch of all rare and curious forms, and wrap each specimen in a piece of tinfoil, before putting it into a bottle of alcohol, or Goadby's solution, or into a bottle of sea-water, if you desire to study their habits to advantage. The remainder of the contents are thrown into a tub, and the dredge lowered whilst they are being sorted.

PRESERVING.—The animals in shells must be killed by immersion in hot water: as univalve shells are apt to crack under such treatment, the heat must be gradually increased by adding more hot water: when the animal of a bivalve is dead, the valves of the shell separate a little. The animal when dead is removed with the point of a knife, or crooked pin. The operculum where it exists is wrapt in paper and put in the mouth of the shell, which is then laid on a towel to dry in the sun, and a thread is wrapt round the bivalves to keep them closed till dry; but previous to this, all marine shells should have a bath in fresh water, for several hours, to extract the saline particles, which would otherwise greatly injure the specimens. All extraneous bodies, such as sea-weed, Serpulæ and Acorn shells, must be removed with the point of the knife, or with a hard brush and water: all shells, but especially such as have been picked up along shore, have their ap-

pearance greatly improved by the application of a very little olive oil to them, either with a bit of soft leather or a brush.

The best way of preparing Shells for the cabinet is to procure a supply of thick pasteboard, soft enough to be easily cut with a knife. Get a bookbinder to cover one side of it with paper of a light stone colour, and when dry, to cut into strips of the uniform breadth of three inches, the length varying according to the size of the shells; to these slips of card the shells are affixed with a little thick paste, made of gum arabic, brown sugar, flour, and a little water. In the case of Univalve Shells, such as the Whelk, two specimens are required to show the species, one lying in its natural position with its mouth undermost and the apex of the spire pointing backwards to the right hand, the second lying in the same position, but with the mouth uppermost. Some Bivalves, such as the Solens or Razor-shells, may have both valves gummed down with their inner surface uppermost, and another shell of the same species in the reversed position. As it is from the impressions of certain muscles on the interior surface, and the teeth and other markings of the hinge of bivalve shells, that their generic characters are chiefly drawn, shells such as the Cockle may have one valve fastened down to the card, whilst the other valve is made to rest partly on the card and partly on the opposite side from the hinge in the other valve; and in the case of a large shell, the lowermost valve may be rested on a cradle, which may be easily fashioned out of a piece of cork or soft wood. The scientific name is written or printed with the pen, in the left-hand corner on the lower margin of the card. All the more minute and fragile shells are best preserved in glass tubes.

RADIATA.

In the Zoologist for 1847, page 1840., will be found the following simple directions for the preparation of Radiata.

"Asteriadæ. Fasten two o
to their arms, and plunge t
into boiling water for three or
according to their size, and t
draught."

ECHINODERMAT

Sea Urchins, and Sea Eggs,
class. Whenever they are take
they should be plunged into a
fresh water, or else their curio
drop off. Enlarge their anal
tract the contents of their s
with cotton after applying the

ENTOZOA.

Intestinal Parasites can only
in alcohol, or in Goadby's solu
found in many animals, birds,

ZOOPHYTES AND SP

These are a very curious cl
whose animal nature was lon
grave dispute. The beautiful
talented Dr. Johnston on the
have given a great impulse to t
tion. A few species may be
pools left by the tide, but the
the collector's main stay. A
however may be picked up in a
time, by diligently examining
the fishers' nets, lines, and boa
lector will have to contend w
judices of these hardy fellows,
their silent, if not expressed,
their much-prized "rubbish,
perseverance, kindness, and
and a few presents, will by an
good graces.

Zoophytes and Sponges must
cold fresh water, and dried in a
then deposited in card trays or
of paper, like dried plants.

*** For a List of Persons, in London or its vicinity, who can suppl
Objects and Natural History Apparatus, see end of Introducti

A GLOSSARIAL APPENDIX,

IN WHICH ARE COMPREHENDED

NUMEROUS TERMS USED IN ZOOLOGICAL WORKS,

AND OTHER WORDS OF FREQUENT OCCURRENCE IN

IF NOT PECULIAR TO,

The Study of Natural History.

ABBREVIATE. Disproportionately short in part.

ABDOMEN. In vertebrated animals, the lower belly, or that part of the body which lies between the thorax and the bottom of the pelvis. It is lined by a membrane called the *peritoneum*, and is separated from the breast internally by the *diaphragm*, and externally by the extremities of the ribs.—In invertebrated animals, the lower part of the body, united to the thorax. It is divided into segments or rings, on the sides of which are small spiracles by which the insect respires. In some it is covered by wings and a case.

ABDOMINAL. Pertaining to the abdomen.

ABERRANT. Wandering, or deviating from; a term applied to those species which deviate most from the type of their natural group.

ABNORMAL; ABNORMOUS. Irregular; deformed.

ABRANCHIATE. Devoid of gills.

ACANTHOCEPHALOUS. Pertaining to an order of intestinal worms, which have the head armed with spines or hooks.

ACCESSORY. Additional; subordinate to the principal.

ACCLIVOUS. Inclining by a gentle ascent.

ACEPHALOUS. Having no apparent head; a term to denote those animals in which a distinct head is never developed.

ACEROUS. A term applied to insects that have no antennæ.

ACETABULA. The fleshy sucking-cups with which many of the invertebrate animals are provided.

ACHATINE. Marked with various concentric, curved, or parallel lines, resembling the veining of an agate.

ACICULÆ. Small spikes, spines, or prickles with which many animals are armed; as the hedgehog, several of the crustacea, &c.

ACINACIATE. Falchion-shaped. Curved with the apex truncate, and growing gradually wider towards the end.

ACINACIFORM. Whose horizontal sections are acute-angled triangles gradually increasing in *diameter from the base* to the *apex, and propagated in a curved* line.

ACINI. The secreting parts of glands, when they are suspended like small berries to a slender stem.

ACINIFORM. Being in clusters like grapes.

ACUDUCTED. Scratched across very finely as if with the point of a needle or pin.

ACULEATED. Furnished with prickles, as the body of a hedge-hog; or ending in a sting, as the abdomen of a female wasp or bee.

ACULEIFORM. A term applied to the ovipositors of Hymenopterous insects, which consist of the same parts, with the exception of the poison-bag, whether used as weapons or merely in oviposition.

ACUMINATE. ACUMINATED. Terminating gradually in a sharp point.

ACUTE. Terminating in an acute angle.

ADDUCTOR (Muscle). A muscle which draws one part of the body towards another; as the *adductor pollicis manus*, which draws the thumb towards the fingers.—In shells, that which closes the two pieces of a Bivalve together, the insertion of which is indicated by an irregular depression in each valve.

ADENIFORM. Of a gland-like shape.

ADIPS. Fat; a concrete oily matter contained in the cells of the adipose tissue. It differs in its properties in different animals, and often differs also in the same animal at different ages.

ADPERNATA. A term applied to the pupa of an insect when the prior skin is thrown off, and the eyes, antennæ, legs, and wings of the future perfect insect appear through the case.

ADIAPHANOUS. Not transparent in the least degree.

ADIPOCIRE. A substance of a peculiar nature, being intermediate between fat and wax, and bearing a close resemblance to spermaceti. Different opinions have been entertained as to the nature of the operation by which adipocire is produced. From the experiments of Dr. Gibbes (*Phil. Trans.* 1794), it would appear that muscular flesh, when buried in moist earth, is by a peculiar kind of decomposition, scarcely to be considered as putrefaction, converted

dour of brass.

ABRIAL. Inhabiting or frequenting the air.

ABRIDGED. Respiratory organs often foliaceous, with which the sides of the abdomen, the tail, and sometimes the trunk of aquatic larvæ and pupæ are often furnished.

AFFINITY. That tendency which different species of matter have to unite and combine with certain other bodies, and the power that disposes them to continue in combination.

AGGLUTINATED. United by some viscous fluid.

AGGRETTE. A pointed tuft of feathers.

AIR-BLADDER. An organ possessed by most fishes, which gives to them the faculty of increasing or diminishing their specific gravity, and assists their powers of locomotion.

ALÆ. The wings of birds or insects.

ALAR. Belonging to a wing.

ALATE. ALATED. Winged; a term applied to the expanded lips of certain shells; and to the dilated sides of the thorax, &c. in some insects.

ALBINISM. The change from a dark colour to perfect whiteness, which (from some accidental cause) is occasionally seen in the fur of quadrupeds and in the plumage of birds.

ALBUMINOUS. Consisting of albumen, or the substance which forms the white of an egg.

ALIFORM. Shaped like a wing; in form and substance like the membranous wings of insects.

ALIMENTARY CANAL. The great duct or intestine, in animal bodies, by which the aliment (food) is conveyed through the body, and the useless parts evacuated.

ALIPED. A wing-footed animal, or one whose toes are connected by a membrane, and which serve for wings; as the *bat*.

ALLIACEOUS. Having a scent of garlic.

ALTIVOLANT. Flying high in the air.

ALULA. A little wing.

AMPHIPODAL. [illegible] swimming a[illegible]

AMPLECTED. [illegible] is received in[illegible]

AMPLIATE. D[illegible] end.

ANADROMOUS. [illegible] denote such [illegible] periods of g[illegible] the salt, and [illegible] kind is the [illegible] Trout family [illegible] to have dec[illegible] spawned in f[illegible] continue till [illegible] and acquire [illegible] they seek the [illegible] more at large [illegible] They then re[illegible] their spawn, [illegible] have the sa[illegible] their adolesc[illegible] when they ag[illegible]

ANAL. Pertain[illegible] is that betwe[illegible]

ANALOGUE. A[illegible] which has th[illegible] part or organ [illegible]

ANALOGOUS. [illegible] resemblance.

ANASTOMOSE. [illegible] vessels unite [illegible]

ANATIFEROUS. [illegible]

ANATOMY. Th[illegible] ting the diffe[illegible] to discover th[illegible] economy. C[illegible] branch of an[illegible] anatomy of o[illegible] a view to comp[illegible] of human be[illegible] the animal fu[illegible]

ANDROGYNOUS. [illegible] combination [illegible] in the same b[illegible]

ANENTEROUS. [illegible] rial animalcul[illegible]

part; applied to the antennæ of insects when the setigerous joint is not conspicuously larger than the preceding one, beginning with a narrow base, and growing broader.

ANNELIDOUS. Belonging or pertaining to the *Annelida*, a division of the class *Vermes*.

ANNULATA. Those invertebrated animals in which the covering or envelope of the body is divided by transverse folds into rings, whose teguments may be either hard or soft, the muscles being situated internally.

ANNULATE. When a leg, antennæ, &c. of an insect is surrounded by a narrow ring of a different colour.

ANNULATED. Formed of, marked with, or divided into distinct rings.

ANNULOSE. Furnished with or composed of rings.

ANOMALIPED. When the middle toe of a bird is united to the exterior by three phalanges, and to the anterior by one only.

ANOMALOUS. Deviating from a general rule or system; different from congeneric species, &c.

ANOUROUS. Destitute of a tail.

ANSERINE. Pertaining to the genus *Anser*; resembling a goose.

ANTENNÆ. The horn-like processes projecting from the head of insects and crustaceous animals. In insects they are uniformly two in number, but in crustacea there are more than two; and they are composed of small rings successively added to each other till they form a tube, containing nerves, muscles, and air-pipes. In some insects the antennæ are very long, in others short. That they are organs of some sense is very evident, and it has long been considered to be that of touch; hence they have been called *feelers*: but M. Straus-Dürckheim, who paid great attention to this subject, thinks differently, and says, "when observing the various actions of insects, we see them suddenly stretch their antennæ forwards in case of noise, danger, or, in general, when anything is done to attract their attention; and they keep them thus stretched forward as long as their attention continues; a circumstance which proves that the antennæ serve the purpose of apprising them of what passes at a distance, and consequently must either be organs of hearing or organs of smell." Other naturalists have made experiments which led them to a similar conclusion; and it is now pretty generally admitted that, instead of being the organs of touch, the antennæ of insects are the organs of hearing. But whatever may be the use for which they were designed by nature, they have been employed by entomologists as excellent distinctive characters of genera, &c., and are known by various epithets, according to their form and covering; as, *setaceous* (bristle-like), when they are long, slender, and taper to the point, without any marked indentation or protoberance; *filiform* (thread-like), when preserving throughout a uniform size and substance; *incrassated*, gradually increasing in substance towards the apex; *moniliform* (necklace-shaped), each separate joint being oval or globose, and the portion connecting it with the next joint very slender; *ensiform* (sword-like); *fusiform* (spindle-shaped); *aristate* (terminated by a hair); *serrate* (saw-like); *dentate* (toothed); *pectinate* (comb-shaped); *ciliate* (each joint furnished on each side with a single hair); *flabellate* (fan-shaped); *furcate* (fork-like); *ramose* (branched); *plumose* (feathered); *lamellate* (with a plate-like knob); *perfoliate* (with a knob, composed of loosely-attached joints); *verticillate* (with whorls of hair); *pilose* (covered with down); *setose* (furnished with irregular, harsh, bristly hair); *cylindrical*, *prismatic*, &c.

ANTENNAL. Relating to the antennæ of insects.

ANTENNIFORM. Having the form of or being shaped like antennæ.

ANTERIOR. The fore part; as the *anterior* limbs opposed to the *posterior*. In *bivalve shells*, the side opposite to that on which the ligament is situated: of a *spiral univalve*, that part of the aperture which is at the greatest distance from the apex: of a *symmetrical conical univalve* (such as Patella), that part where the head of the animal lies, indicated by the interruption of the muscular impression: of *Cirripedes*, that part where the cilia protrude.

ANTIPERISTALTIC. A term applied to the vermicular contractions of a muscular tube when they follow each other in a reverse direction to the usual mode.

ANTIQUATED. A term in conchology to denote that a shell is longitudinally furrowed, but interrupted by transverse furrows, as if it had acquired new growth at each furrow; *i. e.* each fresh deposit or layer of calcareous matter, forming a new margin, being replaced by its successor, no longer constitutes the margin, and is consequently *antiquated* (out of date).

ANTLERED. Furnished with *antlers*, or branching horns; as, the head of a stag.

ASTLIA. The oral instrument of Lepidopterous insects, in which the ordinary *trophi* are replaced by a spiral, bipartite, tubular machine for suction, with its appendages.

ANTORBITAL. Opposite the orbits.

ANUS. The termination of the rectum.—In entomology, the last two segments of the abdomen.—In conchology, a depression of the posterior side near the hinge of bivalves.

AORTA. The great artery, or trunk of the arterial system, in animal bodies. It proceeds from the left ventricle of the heart, and gives origin to all the arteries, except the pulmonary arteries.

AORTAL. AORTIC. Pertaining to the aorta.

APERTURE. A hole, cleft, or chasm; any opening, as the mouth of a shell, from which the head of the animal protrudes. The *aperture*, or entrance to the spiral cavity of univalve shells, is composed of the inner lip, or labium, which generally forms the axis of the shell, and the outer lip or labrum, on the opposite side.

APHIDIVOROUS. Subsisting on the aphis or plant-louse; a term applied to the larva and imago of many insects.

APIARY. The shed, stand, or other place where bees are kept.

APICAL. Belonging to the apex, or pointed end of a cone-shaped body.

APICULATE. Terminating suddenly in a small filiform truncate apex.

APODAL. Without feet or locomotive organs: fishes are so called which have no ventral fins.

APOPHYSES. An excrescence.

APPENDICULA. A small piece sometimes appended to the upper lip of an insect.

APPENDICULATE. When from one of the joints of an insect there issues an accessory joint or appendage; when the appendages have one or two antenniform processes at their base.

APPLICANT. Applied to insects' wings when at rest they are parallel with the abdomen.

APPROXIMATE. When the teeth of insects are so arranged in the jaws that there is no intervening vacancy; or when their legs are near each other at the base.

APTEROUS. Wingless; applied to insects which have no wings.

AQUATIC. Pertaining to water: applied to animals which live in water, as fishes; or to such as frequent it, as aquatic birds.

ARACHNOID. Formed like a spider's web.

ARBOREAL. ARBOREOUS. Belonging to trees; resorting to or dwelling in trees.

ARBORESCENT. Branched, or bearing some resemblance to a tree.

ARCTIC. Pertaining to northern regions; as the arctic pole, or sea.

ARCUATE. Linear and bent like a bow.

ARCUATED. Bent in the form of an arch.

AREA. The surface between given lines or boundaries.

AREATE. When the mesothorax of an insect is larger than the prothorax, and terminates towards the wings in two oblique areas, inclosed by a ridge often crowned anteriorly with little teeth.

ARTHRODIAL. A
of joint, or spot
the head of on
shallow socket
ARTICULATE FA
contiguous spo
ARTICULATED. J
with external j
limbs. The ter
parts of shells,
into each other
ASCENDING. In
what steep asc
ASPER. ASPERA
rough or unev
ASSIMILATE. T
stance.
ASPUTIATED.
animation, but
ASTERIALITE.
fish.
ATROUS. Pure b
ATTENUATED.
made slender,
ally tapering
ately slender in
AURATE. Of a
AURELIA. The
AURELIAN. Lik
relis.
AURICLE. The
which is prom
anatomy, the o
muscular bags,
in form resemb
and cover the v
caps: they re
veins, and con
trichos. Also,
an ear.
AURICLED. AU
like appendage
describing cert
flat angulated
one or both sid
AURICULARS. T

round which the whorls of a spiral shell revolve.

AZURE. A pale but clear and brilliant blue colour.

BACCIVOROUS. Feeding or subsisting on berries.

BARBATE. When any part is clothed with longer hairs, resembling a beard.

BARBED. Furnished with *cirri*, or with filaments resembling a beard. Armed with jagged hooks or dart-like points.

BARBULES. Filamentous appendages, or barbs, attached to the mouths of certain fishes.

BASAL. Pertaining to or constituting the base.

BASE. The lower termination of any part. This term is sometimes used, in conchology, as simply opposed to *apex*, and applied to the anterior of the aperture; but, according to Sowerby, "in all shells that are attached to marine substances, the base is that part of the shell which forms the point of attachment. *Ex.* The attached valve of Spondylus; the basal plate of Balanus; the lower part of the pedicle of Pentalasmus: in unattached bivalves, the margin opposite the umbones where the part analogous to the foot of the animal protrudes: in spiral univalves, the aperture, which rests on the back of the animal when walking."

BAT-FOWLING. A mode of catching birds at night, by holding a torch or lanthorn, and beating the bush where they roost. The birds flying to the light are then generally caught with nets.

BATRACHIAN. Pertaining to frogs: an epithet designating an order of reptiles, which includes frogs, toads, and other allied animals.

BAY. Of a bright red brown, inclining to a chestnut colour.

BEE-BREAD. The pollen of flowers collected by bees, as food for their young.

BEETLE-BROWED. Having prominent brows.

BELTING. When the eyes of an insect nearly meet both above and below the head, so as to form a kind of belt round it.

BIARTICULATE. Composed of two articulations or joints: applied to the antennæ and the abdomen of insects.

BIANGULATED. Having two corners or angles.

BICAUDATE. Having two tails.

BICARINATED. Having two elevated or sharp ridges.

BICIPITAL. BICIPITOUS. Having two heads. Applied to the muscles, it signifies having two heads or origins; and any such muscle is denominated *biceps*.

BICOLLIGATE. In ornithology, the connexion of all the anterior toes by a basal web.

BICORNUTE. BICORNOUS. Having two horns.

BICUSPID. Having two points.

BIDENTAL. Having only two teeth.

BIDIGITATE. Having two fingers or finger-like appendages.

BIFARIOUS. Facing in opposite directions.

BIFID. Divided *by having a deep notch down the centre, opening* with a cleft.

BIFORM. *Having two forms*, bodies, or shapes.

BIFURCATED. Divided into two prongs or forks. In entomology, denoting that the antennæ are composed of three joints, of which the apical one is bent double, and attached to the second joint by its centre.

BILABIATE. Furnished with two lips.

BILATERAL. Having two symmetrical sides.

BILIARY. Belonging to or conveying the bile: *as, a biliary* duct.

BILOBED. BILOBATE. Divided into two lobes.

BILOCULAR. Divided into or containing two cells.

BIMARGINATE. Furnished with a double margin; as the lip of certain shells.

BIOCELLATE. When the wing of an insect is marked with two eye-like spots.

BIPALPATE. When an imperfect mouth has only labial or maxillary palpi.

BIPAROUS. Bringing forth two at a birth.

BIPARTITE. Divided into two corresponding parts. Applied to the *antennæ*, it signifies that they are divided to the base into two nearly equal branches.

BIPECTINATE. Relating to some part which has two margins toothed like a comb.

BIPED. An animal having two feet, as Man.

BIPEDAL. Having two feet.

BIPELTATE. Relating to any part having a defence like a common shield.

BIPENNATE. Having two wings.

BIPUPILLATE. When an eye-like spot on the wing of a butterfly, has two dots or pupils within it of a different colour.

BIRADIATE. Having two rays; as, a *biradiate* fin.

BISECT. BISECTED. When the head and trunk are not separated by a suture, so that an insect consists only of two pieces.

BISERRATE. When the *antennæ* are on each side serrate or toothed like a saw.

BISEXUAL. Partaking of the nature of both sexes.

BISULCOUS. Cloven-footed; as, swine or oxen.

BITUBERCULATE. Having two knobs or tubercles.

BIVALVE. A shell consisting of two parts, which open and shut, as the oyster.

BIVALVE: BIVALVULAR. Having two valves or shells which open and shut.

BIVENTRAL. Having two bellies.

BLOOD. The nutritive fluid which circulates through the arteries and veins of an animal body, and which is essential to the preservation of life. All the other animal fluids are derived from the blood by secretion.

BLUBBER. The fat of whales and other large marine animals, of which is made train-oil. It lies immediately under the skin and over the muscular flesh.

BOMBYCINOUS. Of the colour of the silk-worm; transparent, with a yellow tint.

BOOM. To cry as the bittern.

BOREAL. Pertaining to the north or northern regions.

BOSS. In bivalve shells, the projecting point in each valve, near the hinge.

BOSSED. Studded or knobbed, covered over with protuberances.

BOTRYLLI. A little cluster of berry-shaped bodies.

BRACKISH. Salt in a moderate degree; as, *brackish* water.

BRANCHIÆ. The respiratory organs which extract the oxygen from air contained in water; the filamentous organs of fishes by which they breathe in the water.

BRANCHIAL. Relating to the *branchiæ*, or respiratory organs of fishes.

BRANCHIOPODOUS. Belonging or pertaining to the *Branchiopoda*, an order of crustacea in which the feet support the gills.

BRANCHIOSTEGOUS. Having gill-covers, as a *branchiostegous* fish; or covering the gills, as the branchiostegous membrane.

BREED. A race or progeny from the same parents or stock. Also, to have birth or be produced; as fish *breed* in rivers.

BREEDING. The raising of a breed or breeds; as, the farmer attends to the *breeding* of sheep.

BREVIPED. A fowl having short legs. Short legged; applied to certain birds.

BRINDLED. Variegated with spots of different colours.

BRISTLE. The stiff glossy hair of swine, especially that growing on the back.

BROCKET. A red deer two years old.

BRONCHIAL. Relating to the bronchia, or ramifications of the wind-pipe in the lungs.

BROW-ANTLER. The first branch that grows on a deer's head.

BROWSE. To feed on the tender branches or shoots of shrubs and trees, as cattle, sheep, and goats.

BRUMAL. Belonging to the winter.

BUCCAL. Belonging to the mouth.

BUCCATE. When the *nasus* and anterior part of the head of an insect are inflated.

BURNISHED. Having the appearance of being polished or made glossy.

BURROW. A hollow place or excavation in the earth formed by various small animals for the purpose of dwelling there in security, and sometimes for depositing their provisions. To lodge in a hole excavated in the earth, as rabbits, &c.

BUTYRACEOUS. Having the qualities of, or resembling butter.

CASSIOUS. Very pa
the colour of wha

CALCARATE. Whe
one or more spurs

CALCAREOUS. Par
lime.

CALCAREUM. A sp
cess to the tail.

CALCARIA. The st
tibiæ in most in
spurs on the legs
Gallinaceous bird

CALCEOLIFORM. O
arctate in the mi

CALLOSITY. Any
formed in the ski
as the Dromedary
parts which are
conchologists it
undefined tumi
appear in the int
shells.

CALLOUS. Harden
or cartilaginous

CALLOW. Destitut

CALLUS. Any corn
an indurated kn

CALOTTE. A coveri
of a bird, bearin
in shape to the c
countries as an ec

CAMPANULATE. B

CANAL. A groove
different parts of
to carnivorous m
fitted for the prot
siphon possessed

CANALICULATED.
or furrow.

CANALIFORM. Hav
ston, channel, or

CANCELLATE. Can
marked with cros
crossing longitudi
In conchology, it
of a shell is mar
each other.

CANCERITE. A pet

CAPISTRATE. When the anterior part of the head of an insect is attenuated and subelongated into a kind of flat rostrum, or muzzle.

CAPISTRUM. A word used by Linnæus to denote the short feathers on the forehead, just above the bill. In some birds these feathers fall forward over the nostrils: they quite cover those of the Crow.

CAPITATE. Terminated in a knob. When antennæ suddenly end in a knob of one or more joints.

CAPRIFORM. Having the form of a goat.

CAPUT. The head, or first segment of insects.

CARABIDOUS. Belonging to the group of insects of which the genus Carabus is the type.

CARAPACE. The upper shell of a crab or other crustaceous animal. The hard covering or shell which protects the upper part of the body of the Chelonian reptiles.

CARDINAL TEETH (in shells). Those teeth which receive their full development close to the umbones.

CARINÆ. Keels; when the surface is raised into elongated lines.

CARINATE. CARINATED. Having, as is the case with certain shells, a longitudinal prominence like the keel of a boat.

CARIOUS. Corrupted; ulcerated, as a bone.

CARNEOUS. Fleshy; having the qualities of flesh.

CARNIFICATION. A turning to flesh.

CARNIVOROUS. Subsisting wholly on flesh. The *Carnivora* form a family in the order *Carnaria*. The word is also used to denote a family of coleopterous insects which pursue and devour others.

CARNOSE. Of a soft and fleshy substance.

CARPUS. The wrist.

CARTILAGE. A smooth, solid, elastic substance, softer than bone, and of a homogeneous texture. Applied to shells, it denotes the ligament, a flexible fibrous substance by which the valves are united, situated near the beak.

CARTILAGINOUS. The term applied to those fishes whose muscles are supported by cartilages instead of bones, or whose skeleton is cartilaginous. Many of these are viviparous, as the Ray and Shark, whose young are excluded from an egg hatched within them. Others are oviparous, as the Sturgeon. Some of them have no gill-covers, but breathe through apertures on the sides of the neck or top of the head: others have gill-covers, but are destitute of bony rays.

CARUNCLE. The fleshy comb on the head of a fowl; a soft wart-like eminence.

CARUNCULATED. Having a fleshy excrescence, or soft fleshy protuberance.

CASEOUS. Having the qualities of cheese.

CASQUE. A helmet-shaped tuft on the head of a bird.

CASTANEOUS. Of a rich deep brown—the colour of a horse-chestnut.

CATENATE. A term used when the surface between impressed lines on elytra, &c. is divided into oblong elevations, and is supposed *to resemble a chain.*

CATENULATE. Consisting of little links or chains; having a series of elevated oblong tubercles resembling a chain.

CAUDA. A tail: applied to parts resembling a tail. In shells, the elongated base of the ventre, lip, and columella.

CAUDAL. Belonging or pertaining to the tail.

CAUDATE. CAUDATED. Having a tail. When the wings of insects terminate in a tail-like process.

CAUDULÆ. Tail-like appendages to insects, as in Cockroaches and Crickets.

CAVERNULOUS. Full of little cavities.

CELLULÆ. The divisions into which the membranaceous wings of insects are divided by the nervures.

CELLULAR. Consisting of cells, or containing cells. The *cellular membrane*, or *cellular tissue*, in animals, is composed of an infinite number of minute cells communicating with each other, and serving as reservoirs for fat.

CELLULIFEROUS. Bearing or producing little cells.

CEMENTITIOUS. Agglutinating, having the quality of cementing.

CEPHALIC. Belonging to the head.

CEPHALO-THORAX. The anterior division of the body in spiders, scorpions, &c., which consists of the head and chest united.

CEPHALOPODOUS. Belonging to the *Cephalopoda*, the class of Molluscous animals, in which long prehensile processes, called feet, project from the head.

CEPHALOPHOROUS. Belonging to one of the three orders of the class *Cephalophora*; the first consisting of Cuttle-fish, &c., which are destitute of shells; the second composed of those microscopic cellular bodies, which are regarded as shells by some authors; and the third containing the true chambered shells.

CERCÆ. The feelers which, in some insects, project from the hind part of the body.

CERCARIÆ. Those insects whose body is terminated by a tail-like appendage.

CERCARIIFORM. Shaped like the cercariæ.

CERE. The naked skin which, in some birds, covers the base of the bill.

CEREAL. Relating to the cere, or naked skin that covers the base of the bill in certain birds.

CEREBELLUM. The hinder part of the head, or the little brain.

CEREBRAL. Pertaining to the cerebrum or brain.

CEREBRUM. The brain.

CEREBROIDÆ. The knots in which the diffused brain of insects is centred.

CEREOUS. Partaking of the nature of wax.

CERNUOUS. When the head of an insect forms downwards an obtuse angle with the horizontal line, or trunk.

CERVICAL. Belonging to the neck.

CERVICULATE. When the prothorax is elongate, attenuate, and distinguished from the antepectus by no suture; so as to form a distinct and unusually long neck.

CETACEOUS. Pertaining to the whale kind.

CETOLOGY. The natural history of cetaceous animals.

CHALYBEOUS. The blue metallic splendour of the mainspring of a watch.

CHARACTERISTIC. That which *characterizes*, or constitutes a character.

CHATOYANT. [FR.] Having a changeable, undulating lustre, like that of a cat's eye in the dark.

CHEEK-POUCHES. The hollow recesses in the cheeks of certain rodent and quadrumanous animals, which they use as receptacles for food.

CHELATE. When the upper jaws are furnished at the end with a *chela* or thumb.

CHELIFEROUS. When the cauda or tail is terminated by a very thick forceps somewhat resembling a lobster's claw.

CHELIFEROUS. Furnished with claws.

CHELÆ. The bifid claws of the crustacea, scorpions, &c.

CHELICERA. The prehensile claws of the scorpion, which are the homologues of antennæ.

CHELIFORM. Having the form of a claw.

CHELONIAN. Belonging to or having the properties of an order of reptiles which includes the Tortoises and Turtles.

CHILOPODOUS. Belonging to the *Chilopoda*, an order of many-footed insects, typified by the Centipede.

CHITINE. The peculiar chemical principle which hardens the integuments of insects.

CHOROID. In anatomy, a term applied to several parts of the body that resemble the chorion, or exterior membrane which invests the fœtus in utero; as the inner membrane investing the brain, &c.

CHYLE. The nutrient fluid extracted from the digested food by the action of the bile.

CHYLIFACTIVE. Forming or changing into chyle; having the power to make chyle.

CHYLIFEROUS. Transmitting chyle.

CHYME. The digested food which passes from the stomach into the intestines.

CHRYSALIS. The particular form which Butterflies, Moths, and some other insects assume, before they arrive at their winged or perfect state. It is also called *aurelia*, from *aurum*, gold. In this form, the ani-

CLOACA. The cavity common to the termination of the intestinal, urinary, and generative tubes.

CLOVEN-FOOTED. Having the foot or hoof divided into two parts, as the ox; bisulcous.

CLYPEIFORM. Shield-shaped; applied to the large prothorax in beetles.

CLYPEATE. When the prothorax quite covers and overshadows the head; or when a concavo-convex plate is affixed to the outside of the cubit.

COALITE. When parts usually separate are distinguished neither by incisure, segment, nor suture.

COARCTATE. Enveloped closely by a case, as the pupa of an insect which gives no indication of the parts it covers.

COCHLITE. A fossil shell having a mouth like that of a snail.

COCOON. An oblong ball or base in which certain insects involve themselves and pass their pupa state of existence; as, the silkworm involves itself in a *cocoon*, by forming threads of which its silk is afterwards composed.

COCHLEATED. Spiral, resembling a turbinated shell.

COLEOPTEROUS. Belonging to the *Coleoptera*, an order of insects in which the first pair of wings serves as a sheath to defend the second pair.

COLLAPSE. To close, by falling together.

COLLATERAL. Descending from the same stock or ancestor.

COLLIGATE. Adhering, or so fixed to any part as to have no separate motion of its own.

COLLIFORM. When the prothorax is short and narrow, and not so conspicuous as the other pieces of the trunk.

COLLUM (the neck). In entomology, the constricted posterior part of a pedunculate head, by which it inosculates in the trunk.

COLON. In anatomy, the largest division of the intestinal canal.

COLUBRINE. Relating to serpents.

COLUMELLA. The central column, taking its rise from the basal centre.

COLUMELLAR. Pertaining to or resembling a columella.

COLUMNAR. Formed like the shaft of a column; the vertical section cuneate, the circular horizontal.

COMATE. The surface thickly covered by very long flexible hairs.

COMMIGRATE. To migrate together, or in a body, from one country to another.

COMMISSURE. Articulation; a joint, seam, or closure; a suture in the cranium or skull. Also, certain parts in the ventricles of the brain, uniting the two hemispheres.

COMPARATIVE ANATOMY. [See ANATOMY.]

COMPLANATE. A convex or irregular surface having a plain light depression.

COMPONENT. Forming a compound; as, the *component* parts of a fossil substance, &c.

COMPOSITUS (*ventriculus*). The upper part of the stomach of an insect, having a long pear-shaped cell for the reception of blood sucked from animals.

COMPLICANT. *When the elytra lie a little over each other.*

COMPOUND EYES. Those eyes of insects which consist of an aggregate of hexagonal lenses.

COMPRESSED. Flatted at the sides vertically.

CONCAMERATED. Arched over; vaulted.

CONCAVE. Hollow, and arched or rounded, as the inner surface of a spherical body.

CONCAVO-CONCAVE. Concave or hollow on both surfaces.

CONCAVO-CONVEX. Concave on one side, and convex on the other.

CONCENTRIC. Having a common centre. Surrounding a centre; applied to the direction taken by the lines of growth in spiral and other shells.

CONCHÆ. Shells consisting of two or more pieces or valves, bivalves or multivalves.

CONCHIFEROUS. Pertaining to the *Conchifera*, a class of Invertebrated animals, or Mollusca inhabiting bivalve shells. Producing or having shells.

CONCHIFORM. When the base-covers of an insect are a semi-circular concavo-convex scale something resembling the valve of a bivalve shell.

CONCHIFER. A bivalve shell with unequal valves.

CONCHITE. A fossil or petrified conch or shell.

CONCHOIDAL. Resembling a conch or marine shell; having convex elevations and concave depressions, like shells.

CONCHOLOGICAL. Pertaining to conchology.

CONCHOLOGY. The science which treats of shells and their included animals.

CONCHYLACEOUS. Pertaining to or resembling a shell; as *conchylaceous* impressions.

CONCOLORATE. Of the same colour with another part.

CONCRETION. The act of growing together, or of uniting, by other natural process, the small particles of matter into a mass. A solid substance formed in the soft parts or in the cavities of animal bodies.

CONDENSATIVE. Having a power or tendency to condense.

CONDYLOID. The projecting soft end or process of a bone.

CONFIGURE. To dispose in a certain form, figure, or shape.

CONFLUENT. Flowing together; when spots &c. run into each other.

CONFORMATION. The particular structure of a body, or disposition of the parts which compose it.

CONGENERIC. Being of the same kind or nature.

CONGENERS. Animals of the same kind or nature.

CONGENIAL. Partaking of the same genus, kind, or nature; agreeable to the nature.

CONGENITAL. Of the same birth; born with another.

CONGERIES. A collection of several particles or bodies in one mass or aggregate.

CONGLOBATE. Formed or gathered into a ball.

CONIROSTRAL. Having the beak shaped like a cone.

CONNATE. When parts that are usually separated are, as it were, soldered together, though distinguished by a suture.

CONNATURAL. Participating of the same nature; connected by nature.

CONNECTING NERVURES. Nervures that running transversely or obliquely connect the longitudinal ones, and so form the areolets.

CONNIVENT. The meeting of two lines so as to form an angle. When erect wings are so closely applied to each other that the corresponding margins touch.

CONOID. In anatomy, a gland in the third ventricle of the brain, shaped like a cone or pine, and called the pineal gland.

CONOIDICAL. Having the form of a conoid

CONSANGUINEOUS. Related by birth; descended from the same parent or ancestor.

CONSECUTIVE. Uninterrupted in course or succession.

CONSPERSE. Thickly sprinkled with minute irregular dots often confluent.

CONSTRICT. Suddenly and disproportionably smaller at one end.

CONSUTE. Having very minute elevations in a series at some distance from each other, of a different colour from the rest of the surface.

CONTERMINOUS. Nearly allied; as *conterminous* groups, &c.

CONTORTED. Twisted, or incumbent on each other in an oblique direction.

CONTRACTILE. Having the power of shortening or of drawing into smaller dimensions.

CONVEX. Rising or swelling on the exterior surface into a round or spherical form.

CONVOLUTE: CONVOLUTED. Twisted spirally, or rolled regularly one over the other; when the wings of an insect so envelope the body as to give it a cylindrical form.

CONVOLVOLENT. When the anal area is horizontal, incumbent on the back of the insect, and forms a right angle with the rest of the tegmen, which is vertical and covers the sides.

CORACOID. Shaped like a crow's beak.

CORBICULATE. When the tibia or shank of an insect is fringed with incurved hairs calculated for carrying kneaded pollen.

CORCULA. The reservoir in the dorsal channel through which the blood of insects flows. Each corculum is somewhat pear-shaped, and has a distinct, tough, and elastic coat like that of an artery; and the interior appears to be wholly filled with blood.

CORDATE: CORDIFORM. Heart-shaped. Ovate or sub-ovate, and hollowed out at the base, without posterior angles.

CORIACEOUS. Of a tough, flexible, and leather-like consistence.

CORNEA. The transparent membrane in the fore part of the eye, through which the rays of light pass.

CORNEOUS. Horny; of a horn colour; or resembling horn.

CORNEO-CALCAREOUS. A term in conchology, used to express the mixture of horny and calcareous matter which enters into the composition of some shells. It is also applied to those opercula which are horny on one side, and testaceous on the other.

CORNETS. The hard scaly processes which move and rattle at the end of a rattlesnake's tail.

CORNIGEROUS. Having horns; as, *cornigerous* animals.

CORNUA. Horns, or horn-like processes.

COROLLA. A little crown; a kind of wreath.

CORONAL. Pertaining to the crown or top of the head.

CORONATE PROLEGS. Prolegs that have an entire coronet of crotchets.

CORONATED. Crowned towards the apex, as some shells are, by a row of spines, tubercles, &c.

CORONIFORM. Having the form of a crown.

CORPUS. In conchology, the body of the shell; the last or great wreath in which the aperture is situated.

CORPUSCULAR. Relating to *corpuscles*, or small particles, supposed to be the constituent materials of all large bodies, or the elementary principles of matter.

CORRUGATE. CONRUGATED. When a surface rises and falls in parallel angles more or less acute; wrinkled.

CORSELET or THORAX. That part of winged insects which answers to the breast of other animals.

CORTEX. A thin membrane covering the skin; the epidermis.

CORTICATED. Resembling the bark or rind of a tree.

CORVINE. Relating to the crow kind.

COSTA, or COSTALIS (cellula or nervure). The cell or nervure nearest the upper margin of each wing in insects.

COSTAL. Pertaining to the sides of the body or the ribs; or to the costæ in the wings of insects.

COSTATE. Having several broad elevated lines.

COVERTS, or WING-COVERTS. The *lower coverts* of the wings are the small feathers that lie in several rows on the bases of the wings: the *under coverts* are those that line the inside of the wings: and the *greater coverts* are the feathers that lie immediately over the quill feathers and the secondaries. —— TAIL-coverts are the feathers which cover the tail on the upper side, at the base.

COXA. The first or basal joint of the legs in insects.

CRANIAL. Pertaining to the cranium or skull of an animal.

CRANIUM. The skull of an animal.

CRAW. The crop or first stomach of fowls; an expansion of the gullet.

CRENATE. CRENATED. Marked with small notches, not sufficiently raised or defined to be compared to teeth.

CREMASTER. The anal hooks by which many pupæ suspend themselves.

CRENULATED. Notched at the margin; having the edge cut, as it were, into very small scallops.

CREPERA. A gleam of paler colour upon a dark ground.

CREPITATION. The act of bursting with a frequent repetition of sharp and abrupt sounds.

CREPUSCULAR. Pertaining to the twilight; as, certain birds and insects are *crepuscular*; thereby denoting that they are seen on the wing late in the evening and before sunrise.

a tuft of feathers on the head of birds.
Adorned with a crest or plume.
s. Without a crest.
ous. Abounding with chalk; having the quality of chalk.
im. Resembling a sieve: a term omy, applied to the lamin of the bone, through which the fibres of ctory nerve pass to the nose.
Covered with long thin hair; the appearance of tufts of hair.
Belonging to the *Crinoideans*, or *crmata*, fossils which resemble

d. Curled, or rough with waving

. Having one or two very elevated ually crenate.
ian. Relating to the crocodile or urian reptiles.
he first stomach of a fowl; the

. Divided to the middle into four arms, the angles being either four es, or two obtuse and two acute.
-complicate. When the wings sect) are crossed and folded.
-incumbent. Wings crossed but ed, and covering the back.
m. Disposed in the form of a

Processes resembling legs.
Belonging to the leg.
ous. Belonging to the class of ted animals termed *Crustacea*, a soft and jointed shell; as the bster, shrimp, &c.
ology. That part of zoology which f crustaceous animals, arranging orders, tribes, and families, and ng their forms and habits.
ianchiate. Pertaining to those ous and articulate animals which conspicuous gills.
ine. The white splendour of or glass.
Six-sided, with sides quadrate.
Cuboidal. Having the form of a differing but little from it.
e. When the prothorax is elonto a kind of ventricose cowl or ich receives the head.
form. Cucumber-shaped: whose linal section is oblong, and transcular.
im. In form resembling a flea.
That part of the upper mandible l which runs along the middle and opes on each side.
s. Cultrated. Straight on one curved on the other. Sharp-edged nted; as, the beak of a bird is con- *cultrated*.
em. A three-sided body with two des large and the third small.
. Cuneated. Cuneiform. Shaped wedge. Having the longitudinal r exceeding the transverse, and ng gradually downwards.
s. Of the bright colour of new

l. Adapted for running.

Cuspidate. Terminating in a long setiform point.
Cutaneous. Existing on or affecting the skin.
Cuticle. A thin pellucid membrane covering the true skin.
Cuticular. Pertaining to the cuticle or external coat of the skin.
Cyclobranchiata. Those molluscous animals which have the gills disposed in a circle.
Cylindrical. A mathematical form, which like many others, is used by conchologists with great latitude, and applied to any shell the body of which is somewhat straight, with the ends either rounded, flat, or conical.
Cylindriform. Having the form of a cylinder.
Cymbiform. Shaped like a boat. When the margin of the thorax and elytra of an insect are recurved so as to give a body the resemblance of the inside of a boat, they are said to be *cymbiform*.
Cyst. A bag or tunic which includes morbid matter in animal bodies.

Decapodous. Pertaining to those crustaceous and molluscous animals which have ten feet.
Decaton. The tenth segment of insects.
Deciduous. Parts which are annually shed, or do not last the lifetime of the animal. A shell is described as deciduous where there is a tendency in the apex of the spire to fall off.
Decollated. The term applied to univalve shells in which the apex or head is worn off in the progress of growth. This happens more particularly to those shells whose apex or nucleus is composed of a transparent glassy substance, much more fragile than the rest; and this part being deserted by the animal, which lives in the lower whorls, it is exposed to accident and the decomposing power of water: it consequently falls off, and is then said to be *decollated*.
Decorticated. Divested of the epidermis or skin.
Decussated. An epithet generally applied to striæ or lines which are crossed, or which intersect each other perpendicularly or horizontally.
Dedentition. The shedding of teeth.
Deflexed: Deflected. Bent down; bent or turned aside. When the wings of insects at rest, covering each other, are so bent downwards as to imitate a roof, of which their interior margin forms the ridge.
Dehiscence. The splitting open of the bag containing the insect's eggs.
Dehiscent. When the base-covers diverge a little at the apex.
Deltoid. Triangular.
Dendritic. Branched like a tree.
Dentary. Relating to dentition, or to the teeth; as the *dentary* system.
Dentate. Dentated. Toothed; having tooth-like processes.
Denticle. A small tooth or projecting point, like the tooth of a fine saw.

DEXTRAL. Right-handed. Spiral shells are said to be dextral when the aperture faces the right hand of the observer, the shell being held with the apex upwards.

DIAMETER. The thickness of a body, known by a right line passing through its centre.

DIAPHANOUS. Clear and transparent.

DIAPHRAGM. A muscular membrane placed transversely across the trunk of the human body, at about its middle portion, dividing it into two pretty nearly equal halves: it is one of the chief organs of respiration; its chief function consisting in alternately increasing and diminishing the capacity of the thorax and abdomen. This term is also applied to the *septa*, by which the chambers of multilocular and other shells are divided from each other.

DICEROUS. A term for any insect that has two antennæ.

DICHOTOMOUS. Dividing regularly in pairs.

DIDACTYLOUS. Having two toes.

DIDYNOUS. When areolets are nearly divided into two by a nervure.

DIFFUSED. Dispersed, or extended in all directions.

DIGITATED. Branched out into long points, or having finger-shaped processes.

DIGITIGRADE. Walking on the tips of the toes.

DILATABILITY. The quality of admitting expansion by the elastic force of the body itself, or of another elastic substance acting upon it.

DILATATE. Disproportionably broad in part.

DILATATION. A spreading or extending in all directions.

DILUVIAL. Effected or produced by a deluge, more especially applied to the general deluge in the days of Noah.

DILUVIUM. A deposit of superficial loam, sand, gravel, &c. caused by the deluge.

DIMEROUS. When the tarsi of an insect

take up mud or gravel from the bottom of rivers, &c.

DUODENUM. The first portion of the small intestines.

DUPLICATE-PECTINATE. When the antennæ are bipectinate with the branches on each side alternately long and short.

DUPLICATILE. Folded transversely, as the wings of some coleopterous insects.

DUPLICATIONS (generally of the *skin*). Regular wrinkles or folds.

ECDYSIS. A sloughing or moulting of the skin, as in serpents and caterpillars.

ECHINATED. Set with spines, or bristled, like a hedgehog; when the surface is covered with pustules produced into spines.

ECHINITE. A calcareous petrifaction of the echinus or sea-hedgehog.

EDENTULOUS. Toothless.

EDENTATE. EDENTATED. Destitute or deprived of teeth.

EDRIOPHTHALMA. The Crustacea with sessile eyes.

EFFLORESCENT. Shooting into white spiculæ, forming a white dust on the surface.

EFFUSE. Having the lips (of a shell) separated by a groove or channel.

EGEST. To void, as excrement.

EGG. A body formed in the females of birds and certain other animals, containing an embryo or fœtus of the same species, or a substance from which a like animal is produced. The eggs of fish and some other animals are united by a viscous substance, and called *spawn*. Most reptiles and insects are oviparous.

EJECT. To discharge through the natural passages or emunctuaries; to evacuate.

ELABORATING. Improved by successive operations.

ELEMENT. The substance which forms the natural or most suitable habitation of an animal; as, water is the proper *element* of fishes; air, of man.

ELEPHANTINE. Pertaining to or resembling the elephant; huge.

ELLIPSOID. Having the longitudinal section elliptical, and the transverse circular.

ELLIPTIC. Oval, but having the longitudinal diameter more than twice the length of the transverse.

ELONGATED. Lengthened; extended to a considerable length.

ELYTRA. The external wings, or wing-cases, of coleopterous and other insects. They are called *coriaceous* when composed of a tough, leathery substance, which will bend readily without breaking, but will never fold naturally; *semi-coriaceous* when the basal portion of them is leathery, and the apical portion membranaceous and transparent; and *reticulated* when they are covered by an infinity of nervures crossing each other in every direction, as is exemplified in the Dragon-flies.

EMARGINATE. EMARGINATED. Notched or hollowed out; applied to the edges or margins of shells, when, instead of being level, they are hollowed out; notched round the *edges; when the end has an obtuse* notch *taken out.*

EMBOSSED. Having several parts of a different shape and higher than the rest of the surface.

EMBRYO. The first rudiments of an animal in the womb.

EMUNCTORIES. Parts which serve to carry out of the body noxious particles or excrementitious matter.

ENCEPHALOUS. Having a distinct head; as the molluscous animals termed *Encephala*.

ENSATON. The ninth segment in insects.

ENSATE. Gradually tapering till it ends in a point.

ENSIFORM. Shaped like a sword.

ENTIRE. Not interrupted; not emarginated.

ENTOMOLITE. A fossil or petrified insect.

ENTOMOLOGICAL. Pertaining to Entomology, or that part of Natural History which treats of Insects.

ENTOMOLOGY. That branch of natural science which treats of insects; the term being derived from the two Greek words *entomon*, an insect, and *logos*, a discourse. No portion of Animated Nature requires more careful and elaborate attention on the part of those who make it their study; whether we regard the prodigious numbers which it comprehends, and consequently the formidable array of scientific terms which it presents to the learner; the admirable economy of insects; their wonderful metamorphoses; the brilliant colouring of some, the extraordinary structure of others, or the minute dimensions of myriads of living creatures, all curiously organized and adapted for their respective spheres. In short, although to the merely superficial observer it may appear a trifling pursuit, it is a study that cannot fail to call into exercise the highest powers of the mind, and to implant in it a profound reverence for the Wisdom, Power, and Goodness of the Creator. [See INSECTS.]

ENTOMOSTRACOUS. Pertaining to an order of small Crustaceans, many of which are enclosed in an integument, like a bivalve shell.

ENTOZOA. Those parasitical animals which exist within other animals.

ENTROCHITE. A kind of extraneous fossil, usually about an inch in length, and made up of round joints, which, when separated, are called *trochites*. They are striated from the centre to the circumference, and have a cavity in the middle.

EOCENE. In geology, the older tertiary period, in which the extremely small proportion of living species indicates the commencement of the present existing state of animate creation.

EPHEMERAL. Beginning and ending in a day; as the *ephemera* or day-fly in its imago or perfect state.

EPIDERMAL. Belonging to the cuticle or scarf-skin.

EPIDERMIS. The outer covering or scarf-skin. The membranous covering or fibrous horny coating of some shells.

EPIGASTRIC. Pertaining to the upper part of the abdomen; as, the epigastric regions.

EPIMERAL. Pertaining to the segments of an articulated animal which is above the joint of the limb.

EPIPHRAGM. The membranaceous or calcareous substance by which some species of molluscs close to the aperture of the shell when they retire within to hibernate.

EPIPLOON. The fatty membrane which covers or occupies the interspaces of the entrails in the abdomen.

EPISTOMA. The space between the antennæ and oral cavity in crustaces.

EPISTERNAL. Pertaining to that part of an articulate animal which is immediately above the sternum.

EPITHELIUM. The thin epidermal membrane which covers the mucous membranes.

EPIZOA. The class of imperfectly organized parasitic crustaceans which live upon other animals.

ETIZOOTIC. In geology, an epithet given to such mountains as contain animal remains in their natural or in a petrified state, or the impressions of animal substances. Also, an epithet for a disease which prevails among cattle, in the same manner as an epidemic does among men.

EQUATE. Without larger partial elevations or depressions.

EQUICRURAL. Having legs of equal length.

EQUILATERAL. Having all sides alike; applied to bivalve shells, when a line drawn perpendicularly from the apex would divide the shell into two equal parts.

EQUILIBRITY. The state of being equally balanced; equilibrium.

EQUINE. Pertaining to a horse or to the genus.

EQUIPENDENT. Hanging in equipoise.

EQUIVALVE. Having both valves of equal dimensions.

EQUIVOROUS. Feeding or subsisting on horse-flesh.

ERECT. Nearly perpendicular.

ERECTILE. A term applied to a tissue peculiar to some parts of the animal body; and which is formed of veins, arteries, and nervous filaments.

ERECTO-PATENT. When the primary wings of an insect at rest are erect and the secondary horizontal.

ERODE. Irregularly notched, as if gnawed.

ERUBESCENCE. Redness of the skin or surface of any thing.

ERUGINOUS or ÆRUGINOUS. Green with a blue tint: the colour of the rust of copper, verdigris.

ESCARGATOIRE. A nursery of snails.

ESCHAROTIC. Having the power of scaring or destroying the flesh.

ESCULENT. Eatable, or that may safely be used by man as food.

ESTIVAL. Pertaining to summer, or continuing during the summer.

ETHMOIDAL. Pertaining to a bone at the top of the root of the nose, called the *ethmoid*.

EUPEPTIC. Having good digestion.

EVISCERATED. Deprived of the intestines.

EXARTICULATION. The dislocation of a joint.

EXCAVATE. A depression the arc of which is not the segment of a circle.

EXCISINDED. When the end has an angular notch taken out.

EXCISION. A cutting out or cutting off any part of the body.

EXCORIATED. Abraded; the skin or cuticle rubbed or worn off.

EXCREMENTITIOUS. Consisting of matter evacuated, or proper to be evacuated, from the animal body.

EXCRESCENCE. Any tumour, wart, or preternatural enlargement or superfluous part.

EXCRETORY: EXCRETIVE. Having the quality of excreting or throwing off excrementitious matter by the glands.

EXCURVED. When curved outwards.

EXFOLIATED. Separated in thin scales, as a carious bone.

EXOSSEOUS. Without bones; destitute of bones.

EXOTIC. Produced in a foreign country.

EXPALPATE. When an imperfect mouth has no palpi.

EXPANDED. When wings at rest are horizontally extended and do not cover each other.

EXPLANATE. When the sides of the prothorax are so depressed and dilated as to form a broad margin.

EXSANGUIOUS. Destitute of red blood.

EXSCUTELLATE. When an insect has no visible scutellum, it being wholly covered by the prothorax.

EXSERTED. When the head of an insect is quite disengaged from the trunk.

EXTENDED. When wings at rest do not lie upon the body.

EXTENSOR (muscle). A muscle which serves to extend or straighten any part of the body, as an arm or finger: it is opposed to *flexor*.

EXTINCT. Having ceased to exist, and, when discovered, only found in a fossil state.

EXTRAOCULAR. Applied to the antennæ when they are inserted on the outsides of the eyes.

EXTRAGENEOUS. Belonging to another kind.

EXTRAVASATED. Forced or let out of its proper vessels; as, *extravasated* blood.

EXUVIÆ. Cast skins, shells, or coverings of animals, or any parts which are shed or cast off. Also, the remains of animals which at some period, long antecedent, were deposited in the earth.

EXUVIAL. Pertaining to the spoils or remains of animals found in the earth, supposed to be deposited there at the Deluge, or some great convulsion which the terraqueous globe has undergone.

FACET. A small surface: applied to the composite eyes of insects.

FACIAL. Pertaining to the face; as the *facial* artery, nerve, &c.

FÆCES. Excrement.

FALCATE. FALCATED. Bent or hooked like a scythe; curved with the apex acute.

FALCIFORM. Long and curved, in the shape of a sickle: a word applied to the mandibles of insects.

FALSE LEGS (of insects). Certain prehensile appendages on the lower segments of the body of the larvæ.

tusk, or long sharp-pointed tooth; or talon.

e. Covered with a fixed mealy resembling flour.

A broad transverse stripe, or co- band. A word much used in de- r the painting or markings of in- *Pyramidate fascia;* a band which t into an angle on one side.— *Macu- cia;* a band consisting of distinct *Articulate fascia;* a band con- of contiguous spots. — *Dimidiate* a band traversing only half the *Abbreviate fascia;* a band travers- s than half the wing. — *Sesquialte- scia;* when both wings are tra- by a continued band, and either the y or secondary by another. — *Ses- ous fascia;* when a wing or elytrum s a band and the third of a band.

ED. Filleted, or covered with trans- ands.

. Fasciculus. A small bundle, or tuft.

ATE. When antennæ have several s of hair.

ATED. Consisting of little bundles.

E. A bundle of thick-set hairs onverging at the surface.

TE. When the base-covers are of r greater length than the abdomen, naverse at the end.

A cavity behind the tongue, from the pharynx and larynx proceed.

The animals indigenous or pecu- any country.

LOURED. A reddish brown.

IED. Clothed or covered with fea- s a bird.

K. The anal fork on which the f certain insects carry their fæces.

TED. Rendered prolific; impreg-

Pertaining to cats, or to their spe- s, the *feline* race, &c.

. Belonging to the thigh.

The second joint of the legs in

ATE. When one or two definite in a Lepidopterous wing are denuded is.

Wild; untamed; as lions, tigers, her predatory animals.

NOUS. Of the colour of rust; a yel- brown with some red.

W. Being of a straw colour.

A fine slender filiform body which utes a part of the frame of animals. are soft and flexible, others more nd elastic; some are nervous and while others appear to be composed smaller fibres. They constitute the ce of the bones, cartilages, liga- membranes, nerves, veins, arteries, uscles.

An extremely slender fibre, or the of a fibre.

A soft, solid, white, slightly elastic, odorous substance, constituting the al part of animal muscle: it exists chyle, the blood, &c. and may be re- *as the most abundant constituent of bodies.*

Fibrous. Composed or consisting of fibres; as, a *fibrous* body or substance.

Fibula. The outer and lesser bone of the leg, much smaller than the *tibia.*

Filamentous. Consisting of thread-like filaments.

Filiform. Thread-shaped: slender and of equal thickness.

Fimbriate: Fimbriated. Fringed, *i. e.* when a part is terminated by hairs or bristles that are not parallel.

Fin-footed. Palmated; having feet with toes connected by a membrane.

Finlet. A very small fin or process to assist a fish's motion.

Fissiparous. Capable of being multiplied by the voluntary cleavage of the individual into two parts.

Fissiped. Having the toes unconnected by a membrane.

Fissirostral. Belonging to the *Fissirostres,* a family of passerine birds of which the beak is short, broad, slightly hooked, and the opening of the mouth very wide. This family comprises the swallows and goat-suckers.

Fissure. A little cleft, or narrow chasm.

Fistula. The intermediate subquadrangular pipe, in insects, formed by the union of the two branches of the *antlia,* which conveys the nectar to the *pharynx.*

Flabellate. When the antennæ on one side send forth from the joints, except those at the base, long flat flexile branches, which open and shut like the sticks of a fan.

Flabelliform. Fan-shaped.

Flaccid. Soft and weak; hanging down by its own weight.

Flagellum. An appendix to the legs of Crustacea, resembling a whip.

Flame-colour. Of a bright yellow colour.

Flamniferous. Producing flame.

Fledged. Furnished with feathers, as a bird.

Fleeced. Furnished with a fleece; as, a sheep is well *fleeced.*

Flexile. Flexible. Yielding to pressure; that may be easily bent.

Flexor (muscle). A muscle whose office is to bend the part to which it belongs: it is opposed to *extensor.*

Flexuous. Bending; changing its course in a curved direction; with angles gently winding.

Flirt. A sudden jerk; a darting motion.

Flocculate. When the posterior coxæ are distinguished by a curling lock of hair.

Flocculent. Coalescing and adhering in small flakes.

Flushed. Suddenly aroused and on the wing; as a covey of partridges when surprised.

Fluviatile. Of or belonging to rivers, or to fresh water; living in fresh water.

Fodder. Dry food for cattle.

Fœtus. The young of viviparous animals in the womb, and of oviparous in the egg, after it is perfectly formed; before which time it is called an *embryo.*

Foliaceous. Leaf-like; shaped or arranged like leaves; scarcely thicker than a leaf.

Foliated. Beat into lamina; composed of

after the manner of a pair of pincers or tongs, and used in surgery.

FORCIPATED. Formed like a *forceps*, to open and inclose.

FORE-LEGS. The first or anterior pair of legs.

FORMIC (acid.) The acid of ants.

FORNICATE. Concave above and convex beneath.

FOSSILIFEROUS. Having the quality of, or tending to produce fossils: applied to the strata which contain the remains of animals and plants.

FOSSILIZE. To become or to be changed into a fossil.

FOSSILS. Bodies of animal or vegetable origin, accidentally buried in the earth, as shells, bones, and other substances, and become petrified.

FOSSORIAL. A term applied to animals which dig their retreats and seek their food in the earth.

FOSSORIUS. A term for the leg of an insect when with either palmate or digitate tibiæ.

FOSSULATE. Having one or more long and narrow depressions.

FOVEOLATE. Having one or more roundish and rather deep depressions.

FRUGIVOROUS. Feeding on fruits, seeds, or corn, as birds and other animals.

FRUMENTACEOUS. Pertaining to wheat or other grain.

FRY. A swarm or crowd of little fish.

FULCRANT. When the trochanter merely props the thigh below at the base, but does not at all intervene between it and the coxa.

FULGID. Of a bright fiery red colour.

FULIGINOUS. Of the opaque black of soot.

FULVOUS. Of a tawny or dull yellow colour; the tawny colour of the lion.

FUMOUS. Coloured as if tinged with smoke.

FUNCTION. The peculiar or appropriate action of a member or part of the body, by which the animal economy is carried on; as the *functions* of the brain and nerves, &c.

FUNGUS. A spongy excrescence in animal

radiate.

GANGRENE. living ani

GANGRENES as living fl

GAPING. W do not me gape.

GARGUS. R

GASTEROPOD pods, a cl tinguished attached t

GASTRIC. R gastric juic in digestio

GAZEROU'ND. sight rath

GELATINE. transparen water, hof

GELATINOUS stance; be size.

GEMELLIPAR

GEMINATED. stria conn shells.

GEMINOUS. tubercles,

GEMMIPAROU propagatio like a bud

GEMMULES. animals st ciliated m

GENERATE. generates h

GENERIC. distinct fr nus: thus, nation wh Canis, for animals of kind; Str of the Ostri lows.

ing young in the womb from the period of conception to the birth.

GIBBOSE. Having one or more large elevations.

GIBBOUS. An elevation whose arc is not the segment of a circle. In anatomy, it denotes any unnatural protuberance or convexity of the body, as a person humpbacked.

GILL. The organ of respiration in fishes. The water is admitted by the gill-opening and acts upon the blood as it circulates in the fibrils. Some other animals also breathe by gills; as frogs in their tadpole state, lobsters, &c.

GINGLYMUS. A species of articulation resembling a hinge.

GLABROUS. Having a smooth surface: a term which, either applied to quadrupeds or insects, denotes those parts of the surface which are naturally devoid of hair or pubescence.

GLACIAL. GLACIOUS. Consisting of, or like ice.

GLAREOUS. Viscous and transparent, like the white of an egg.

GLAUCOUS. Of a pale grayish-blue colour; that fine dull green-blue passing into blue, which is seen on certain bodies, is described by the word *glaucous*.

GLIRINE. Belonging to that order of Mammalia, which includes such animals as have two fore teeth, a cutting one in each jaw, no tusks, and feet with claws; comprehending guinea-pigs, rabbits, hares, squirrels, mice, beavers, &c.

GLOBIFEROUS. When the setigerous joint of the antennæ is larger than the preceding one, and globose.

GLOBOSE. Orbicular; globe-shaped.

GLOBULE. A small particle of matter of a spherical form: a word applied to the red particles of blood which swim in a transparent serum, and may be discovered by the microscope.

GLOSSARIAL. Explanatory; containing explanations of scientific or technical terms.

GLOTTIS. The narrow opening at the upper part of the windpipe, which, by its dilatation and contraction, contributes to the modulation of the voice.

GLUTEN. That part of the blood, in animals, which gives firmness to its texture.

GLUTINOUS. Viscid; having the quality of glue; tenacious.

GOSSAMER. A fine filmy substance, like cobwebs, floating in the air, in calm clear weather, especially in autumn. It is probably formed by a species of spider.

GRALLATORIAL. Belonging to the *Grallatores*, an order of birds, having long legs, naked above the knees, which fit them for wading in the water.

GRAMINIVOROUS. Feeding or subsisting on grass: an epithet applied to animals which subsist wholly on vegetable food, to distinguish them from *carnivorous* animals.

GRANIVOROUS. Feeding or subsisting on grain or seeds; as *granivorous* birds.

GRANULE. A small particle; a little grain; a very *minute* elevation.

GRANULATED. Covered with minute grains; feeling or appearing as if formed of small grains or granular substance, as shagreen.

GRANULAR. GRANULOUS. Consisting of grains.

GREGARIOUS. Having the habit of assembling or living in a flock or herd. Cattle and sheep are *gregarious;* so are many species of birds.

GRISEOUS. White mottled with black or brown.

GROUND-BAIT. Bait for fish which sinks to the bottom of the water.

GRUMOUS. Thick; clotted; as, *grumous* blood.

GULLET. The passage in the neck of an animal by which food and liquor are taken into the stomach.

GUM-LAC. The produce of a homopterous insect which deposits its eggs on the branches of a tree called *bihar*, in Assam, and elsewhere in Asia.

GUTTA. A very small round dot, intermediate in size between an *atom* and a *macula*.

GUTTATE. Sprinkled with *guttæ* or minute round spots.

GUTTULOUS. In the form of small drops.

HABITAT. The natural place of permanent abode.

HABITUDE. Customary manner or mode of life.

HALIOTOID. Ear-shaped.

HALTERES. Two small club-like appendages which occur in *Diptera*, and which are supposed to be identical with the hind wings of other insects.

HAMATE. Hooked, or set on with hooks.

HAMIFORM. Curved at the extremity.

HAMSTRING. To cut the tendons of the ham, and thus to lame or disable.

HARE-LIPPED. Having a divided upper lip, like that of the hare.

HARENGIFORM. Shaped like a herring.

HARPOONED. Struck or killed with a *harpoon*, which is a kind of spear, thrown by the hand, used for taking whales. It consists of a long shank, with a broad flat triangular head, sharpened at both edges for penetrating the whale with facility.

HART. A stag or male deer.

HARTSHORN. The horn of the hart or male deer, the raspings of which are used medicinally; *hartshorn jelly* is nutritive and strengthening; and the *salt of hartshorn* yields a pungent volatile spirit. It is composed of muriate of ammonia, with a little animal oil.

HASTATE. Halberd-shaped: triangular, hollowed out at the base and sides with the posterior angles spreading.

HAUSTELLATE. Pertaining to those insects the structure of whose mouth is adapted for drinking or pumping up liquids.

HAUSTELLUM. The instrument of suction (in insects) contained in the *theca*.

HELICAL. Spiral; winding.

HELICIFORM. Shaped like the *Helix* or snail-shell.

HELICITE. Fossil remains of the *Helix*.

HELMINTHOID. Worm-shaped.

HELMINTHOLOGICAL. Pertaining to worms, or to their history.

HEMELYTRA. A wing, of which one half is opaque and firm like the elytra of coleopterous insects.

HEMIBRACHYURA. Having an oval disc at the base of the toes, as is the case with some species of Saurian reptiles.

HEMIPTERAL. Having wings or wing-cases like the Hemipters.

HEMIPTEROUS. Belonging to the *Hemiptera*, an order of insects in which the anterior wings are half crustaceous and half membranaceous.

HEMORRHAGE. A flux of blood, proceeding from the rupture of a blood-vessel, or some other cause.

HEPATIC. Pertaining to the liver.

HERBIVOROUS. Subsisting both on vegetable and animal food.

HERBIVOROUS. Feeding or subsisting on grass and herbaceous plants.

HERCULEAN. Of extraordinary strength and size.

HERMAPHRODITE. An animal in which male and female characteristics are combined.

HERMAPHRODITIC. Partaking of both sexes

HERPETIC. Pertaining to the *herpes*, or subject to cutaneous eruptions.

HERPETOLOGY. The natural history of reptiles.

HESPERIAN. Western; inhabiting a western country.

HETEROCLITE. Anomalous; deviating from the ordinary form, &c.

HETERODACTYLE. Having the toes irregular, either as to number or formation.

HETEROGANGLIATE. Having the ganglionic nervous system, and the ganglions often unsymmetrically scattered.

HETEROGENEOUS. Dissimilar or different in kind or nature.

HETEROMORPHOUS. Of an irregular or unusual form. A term applied to the larvæ of certain insects which differ in form from the image, and which is applicable to the true larval state of all: also, when the two intermediate joints in the *pulpi* of insects are vastly larger than the first and last.

HETEROPODOUS. Pertaining to the *Heteropoda*, an order of the class Molluscs.

HETEROSTROPHE. Reversed: a term applied to shells whose spires turn in a contrary direction to the usual way.

HEXADACTYLOUS. Having six toes.

HEXAPOD. An animal with six legs, such as a true insect.

HEXAPED. Having six feet.

HIDE. The skin of an animal, either raw or dressed.

HIDEBOUND. When the skin sticks so closely to the ribs and back of an animal as not to be easily loosened or raised.

HIND. The female of the Red Deer or Stag.

HIPPOPHAGOUS. Feeding on horse-flesh.

HINGE. The part where the valves of a bivalve shell are united, consisting of ligament and teeth.

HIRSUTE. Thickly set with long, stiffish, rough hairs; shaggy.

HISPID. Beset with bristles or stiff hairs.

HISTOLOGICAL. Pertaining to the doctrine of the tissues which enter into the formation of an animal and its various organs.

HIVE. A box or kind of basket for the reception and habitation of a swarm of honey-bees; or the bees inhabiting a hive. Also, to collect into a hive.

HOARY. White or gray with age; covered with a whitish pubescence.

HOLOSERICEOUS. Covered with thick-set short decumbent hairs, a kind of pubescence resembling satin.

HOMOGANGLIATE. Pertaining to the ganglionic nervous system in animals, and symmetrical arrangement of the ganglions.

HOMOGENEOUS. Of the same kind or nature.

HOMOLOGOUS. The same organ in different animals under every variety of form and function.

HOMOLOGOUS. Proportional to each other.

HOMOMORPHOUS. Of similar forms.

HOMOPTERA. A section of the Hemipterous order of insects, whose four wings have a similar structure.

HONEY-BAG. The stomach of a honey-bee.

HONEY-COMB. A thick, viscid, tenacious substance, formed by bees into hexagonal cells for repositories of honey, and for the eggs which produce their young.

HOOF. The horny substance that covers the feet of certain animals, as horses, oxen, deer, &c.

HOOF-BOUND. A term denoting that the horse or other hoofed animal has a pain in the fore-feet, occasioned by the dryness and contraction of the horn, which often occasions a lameness.

HUMBLES: UMBLES. The entrails of a deer.

HUMERUS. Pertaining to the *humerus* or shoulder; as, the *Humeral* artery.

HUNTER. A man who, either for sport or for food, pursues wild animals with a view to take them. A horse used in the chase.

HYALINE. Glassy; thin; transparent. The pellucid substance which determines the spontaneous fusion of shells.

HYBERNACULUM. HIBERNACLE. A place chosen by an animal for its winter retreat.

HYBERNATE. To pass the winter season in close quarters or in seclusion, and sometimes in a dormant state.

HYBRID. Produced from the mixture of two species. A mongrel.

HYBRIDIZE. To procreate by the mixture of two different species; to propagate mongrels or mules.

HYDATID. A little transparent vesicle containing serous fluid, sometimes found detached in the body of an animal, and sometimes adhering to the different viscera. Some have an organized head and neck, possess an independent vitality, and are considered as constituting distinct animals.

HYDRIFORM. Formed like the fresh-water polypes to which the name of *Hydra* is given.

HYDROPHOBIA. A preternatural dread of water; a symptom of canine madness, or the disease itself.

HYDROZOA. The class of polypi organized like the Hydra.

HYEMAL. Belonging to winter.

HYGROSCOPEOUS. Pertaining to the *Hy-*

mecoptera, an order of insects having four membranous wings, including the Wasp, Bee, &c.

HYPERBOREAN. Belonging to or inhabiting the most northern regions of the earth.

ICHTHYOLOGY. That part of zoology which treats of fishes, their structure, form, and classification, their habits, uses, &c. "An eminent writer observes, that even after nations have attained to some degree of knowledge and civilization, many ages elapse before they push their inquiries far into the subject of Ichthyology, or acquire any considerable acquaintance with the inhabitants of the ocean. In the unfathomed depths of that turbulent and extensive element, probably millions reside which are secluded from human observation; and, even of the few which the industry of man has, at last, drawn from their hidden abode, we hardly know any thing but the external figure and the names. Their food, their longevity, their method of propagating their kind, and the whole of their manners and economy, remain still among those numberless secrets of nature, which human ingenuity has not hitherto been able to explore." It must, however, be apparent to all our readers, that true as the foregoing observations may be in their general application, yet, owing to the great facilities which, of late years, have been afforded for acquiring correct information on all subjects tending to the elucidation of natural science — aided by the zeal and intelligence of many who devote their lives to it — that immense advances have been made; and it is with pleasure that we refer to the contents of this compact volume for the description of a vast number of the inhabitants of the watery element whose forms, habits, and uses are well ascertained, and whose history is scarcely less interesting than is that of animals which dwell on land, or which wing their way through the regions of aerial space. [See FISH.]

ICHTHYOPHAGOUS. Feeding or subsisting on fish.

IDIOPATHIC. A term indicative of a disease peculiar to a part of the body, and not arising from any preceding disease: opposed to *sympathetic*, when it is the consequence of some other disorder.

IMAGO. The last and adult state of insect life, i. e. the third or perfect state of insects, when they appear in their proper shapes and colours, and undergo no more transformations.

IMBIBITION. The act of drinking in or absorbing.

IMBRICATED. Lapping over each other, like the tiles of a house, or as the scales of some fishes and insects.

IMMARGINATE. Being without a margin.

IMMISCIBLE. Not capable of being mixed.

IMMATURE. That has not acquired its perfect form or full colour.

IMPENNATES. Swimming birds having short wings, as the Penguin.

IMPERMEABLE. Not to be passed through the pores by a fluid.

IMPORous. Close or compact in texture; perfectly solid.

IMPOTENT. Deficient in natural power, animal or intellectual.

IMPREGNATED. Rendered prolific or fruitful.

INARTICULATED. Not jointed.

INAURATE. When striæ or other *impressed* parts have a metallic splendour.

INCISED. Cut into equal marginal segments.

INCISORS. The fore teeth; the teeth used for cutting or separating the food; an important generic character in zoological science.

INCISURE. A deep incision between the segments of an insect, when they recede from each other.

INCONSPICUOUS. Not to be perceived by the sight.

INCRASSATE. Disproportionably thick in any part.

INCRUENTAL. Not attended with blood.

INCUBATION. The act of sitting on eggs for the purpose of hatching young.

INCUMBENT. Lying over another.

INCURVATED. Turned from a rectilinear direction.

INCURVED. Turned inwards or bent forwards. The apex of a shell is said to be *incurved* when it is bent inwards, but not sufficiently so to be described as spiral.

INDECIDUOUS. Not falling off; lasting.

INDENTED. Exactly the reverse of *dentated*; meaning a series of small cavities, such as might be formed by the entrance of teeth.

INDIGENOUS. Produced naturally in a country; not exotic.

INDIVIDUALISE. To distinguish the peculiar properties of one from another: the word *individual* and its derivatives are, however, rarely applied to any but human beings.

INEQUILATERAL. When the anterior and posterior sides of a bivalve shell are unequal in length.

INEQUIVALVE. When one valve is more convex than another, or dissimilar in other respects, as in the common oyster.

INFECUNDITY. Unfruitfulness; barrenness.

INFERIOR VALVE (applied only to attached bivalves). The valve that is attached to submarine bodies.

INFLECTED. Bent inwards.

INFLEXED. When the head of an insect forms inwards an *acute* angle with the trunk.

INFUNDIBULIFORM. Funnel-shaped. Whose horizontal sections are circular, at first equal and then progressively larger and larger.

INFUSCATE. To darken. When a colour is darkened by the superinduction of a brownish shade or cloud.

INGUINAL. Pertaining to the groin.

INNOCUOUS. Harmless; producing no ill effect. This word is applied only to *things*, not to persons; as, there are some poisons used as medicines which, if taken in small quantities, prove not only *innocuous* but beneficial.

INOCULAR. When the antennæ are inserted in the *canthus* of the eyes.

INODOROUS. Wanting scent; having no smell.

INOPERCULAR. A term applied to univalve shells which have no operculum or lid.
INORGANIC. Not formed with the organs or instruments of life.
INOSCULATION. The union of two vessels of an animal body at their extremities, by means of which a communication is maintained, and the circulation of fluids is carried on.
INSCRIBED. When the surface is marked with the resemblance of a letter of any language.
INSECT. A small invertebrate animal, breathing by lateral spiracles, and furnished with articulated extremities and movable antennæ.
INSECTILE. Having the nature of insects.
INSECTIVOROUS. Subsisting on insects.
INSTINCT. The operation of the principle of organized life, independent of all instruction or experience, but by which animals are unerringly directed to do spontaneously whatever is necessary for the preservation of the individual or the continuation of their kind. Astonishing manifestations of the instinctive faculty are continually occurring, and might be given if our space permitted it.
INSTINCTIVE. Prompted by instinct; acting spontaneously, without reasoning, instruction or experience.
INSTRUMENTA CIBARIA. The parts of the mouth in insects concerned in the acquisition and preparation of the food.
INTACTABLE. Not perceptible to the touch.
INTEGUMENT. A covering which naturally invests the body, as the skin of an animal or the shell of a crustacean; or a membrane that invests a particular part.
INTELLECT. The understanding; that faculty of the human mind which receives or comprehends the ideas communicated to it by the senses or by perception, or by other means.
INTELLECTUAL. Pertaining to the *intellect*; perceived by the understanding, not by the senses.
INTELLIGENCE. Understanding; skill. The distinctive character of human intelligence over that of the most perfect of other creatures, is the faculty which man possesses of representing general ideas by particular signs or images associated with them; whereas the *instincts* of animals, however ingenious or complicated, are so truly the property of the species, that all its individuals perform them in the same way, without any improvement.
INTERAMBULACRA. The imperforated plates which occupy the intervals of the perforated ones, or *ambulacra*, in the shells of Echinodermæ.
INTERCOSTAL. Placed between the ribs; as, an *intercostal* muscle, artery, or vein.
INTERGANGLIONIC. Belonging to the nervous chords in the intervals of the ganglions, which they connect together.
INTERMAXILLARY. Situated between the jaws.
INTERMIGRATION. Reciprocal migration.
INTERMUSCULAR. Between the muscles.
INTERNODAL. Having a space between one knot or joint and another.
INTEROCULAR. When the antennæ of an insect are inserted any where between the eyes.
INTERORBITAL. Situated between the orbits.
INTEROSSEOUS. Situated between bones; as an *interosseous* ligament or muscle.
INTERSCAPULAR. Situated between the shoulders.
INTERSECTED. Cut or divided into parts by being crossed.
INTERSTICE. In insects, the space between elevations and depressions running in lines.
INTERSTITIAL. Relating to the intervals between parts.
INTERTROPICAL. Pertaining to those countries which lie between the tropics.
INTERVAL. An entomological term denoting the space between irregular and scattered elevations and depressions.
INTESTINAL. Pertaining to the intestines of an animal body; as, the *intestinal* tube or canal.
INTROMIT. To enter, or to allow to enter; to be the medium by which a thing enters or is admitted.
INTROSUSCEPTION. The passing of one part of an intestine within another, causing a duplicature of it.
INTRUDED. When the head of an insect is nearly withdrawn within the trunk.
INVERTEBRATE. Destitute of a backbone or vertebral chain.
INVOLUTE. Rolled inwards. Where the exterior lip of a shell is turned inwards at the margin, as in the Cypreea.
IRIDESCENT. Having colours like the rainbow.
IRIS (plu. *Irides*). The coloured circle which surrounds the pupil of the eye, by means of which that opening is enlarged and diminished.
IRRADIATED. Made luminous, bright, or shining.
IRRESPIRABLE. Unfit for respiration.
IRRIGATE. To water, as land, by causing a stream to flow upon it and spread over it.
IRRORATED. Sprinkled or moistened with atoms, as the earth with dew.
ISABEL or ISABELLA-COLOUR. A brownish yellow colour, with a shade of dark red.
ISCHIADIC (*from ischium*, the hip). Pertaining to a rheumatic affection of the hip joint, generally termed *sciatica*.
ISLET. In entomology, a spot of a different colour, included in a plaga or macula.
ISOPODA. An order of Crustaceans in which the feet are alike, and equal.
ISOLATED. Detached from others of a like kind; standing alone.
ITINERANT. Wandering; not settled.

JUNCTURE. A joint or articulation; a seam or line at which an union between two bodies is effected.
JUGULAR. Pertaining to the neck or throat; as the *jugular* vein.
JUBATE. Having long pendent hairs in a continued series, as in some insects.

KNAG. The shoot of a deer's horns.
KNEE-BRUSHES. The tufts of hair on the knees of some antelopes; also, the thick-set hairs on the legs of bees, with which they carry the pollen to the hive.

LABIODENTAL. Formed or pronounced by the co-operation of the lips and teeth.

LABIPALPI. The labial feelers in insects: two jointed sensiforous organs, which emerge, one on each side, from the *labium*, mostly near its summit.

LABIUM. The lower lip of insects, to which the *labial palpi* are attached: it is often biarticulate. Also, the *inner lip* of a shell, or that side of the aperture which is nearest the axis, and generally contiguous to the body whorl.

LABRUM. The upper lip, when applied to insects. Also, the *outer lip* of a shell; or the edge of the aperture at the greatest distance from the axis.

LAC, or GUM-LAC. A kind of resin deposited on different species of trees in the East Indies, by an insect called *Chermes lacca*. It is variously combined, and much used in the arts.

LACERTINE. Resembling a lizard in form or habits.

LACHRYMAL. Generating or secreting tears.

LACINIA. The blade of the maxillæ, being the fourth or apical portion.

LACINIATE. Jagged, or cut into irregular segments.

LACINIFORM. When the base-covers of an insect are long, of an irregular shape, and appear like lappets on each side of the trunk.

LACTEAL. Pertaining to certain vessels in animal bodies for conveying chyle from the intestines to the common reservatory.

LACTEOUS. White less intense than niveous. The colour of *chalk*.

LACTESCENT. Producing or abounding with milk, or white juice.

LACTIFEROUS. Bearing or conveying milk or white juice; as a *lactiferous* duct.

LACUNOSE. Having the surface covered with pits or shallow excavations.

LAGOON. LAGUNE. A fen, moor, marsh, shallow pond or lake; as, the *lagunes* of Venice.

LAMB. The young of the sheep kind.

LAMELLAR. Consisting of films or thin plates.

LAMELLATED. Divided into distinct layers, plates, or foliations.

LAMELLIBRANCHIATE. Belonging to the class of Acephalous Mollusca with gills in the form of membranous plates.

LAMELLIFORM. Shaped like a thin plate or leaf.

LAMINÆ. Thin plates, laid one coat above another. Hence also *laminated*, disposed in layers, scales, or plates; and *lamination*, arrangement in layers.

LAMINATE. When the posterior coxæ of insects form a broad thin plate which covers the trochanter and the base of the thighs.

LANATE. Covered with fine, very long, flexible and rather curling hairs like *wool*.

LANCEOLATE. Flat, oblong, and gradually tapering to a sharp point, like the head of a lance.

LANIARIFORM. Shaped like the canine teeth of the carnivora.

LANIFEROUS. Bearing or producing wool.

LANUGINOSE. LANUGINOUS. Covered with longish, very soft, fine down.

LARVA. The first active stage in an insect's life; the caterpillar state, or that which precedes the chrysalis and perfect insect.

LARVAL. Pertaining to larvæ, or insects in the caterpillar state.

LARVATE. Masked, as a larva or caterpillar.

LARVIFORM. Shaped like a larva.

LARVIPAROUS. Relating to the *larviparo*, viz. those insects which produce their young in the condition of larvæ, instead of eggs.

LARYNGEAL. Pertaining to the larynx.

LARYNX. The upper part of the windpipe or trachea.

LATERAL. Placed at the side, or extending from one side to the centre.

LATERAL TEETH (*in shells*). Those teeth which taking their rise near the umbones proceed to some distance towards the sides of the shell.

LATERITIOUS. Of the colour of brickdust.

LATESCENCE. Tendency to milk; milkiness or milky colour.

LATITUDE. The distance of any place on the globe, north or south of the equator.

LATTICED. Formed with cross bars or open squares like net-work.

LAY. To produce eggs.

LEGUMINOUS. Pertaining to pulse, as peas, beans, &c.

LEMNISCUS. (A *riband*, Lat.) A term applied to the minute riband-shaped appendages of the generative pores in *Entozoa*.

LENTICULAR. Doubly convex, of the form of a lens: *i. e.* having the opposite sides convex and meeting in a sharp edge.

LEPIDOPTEROUS. Pertaining to the *Lepidoptera*, the order of insects in which the wings are clothed with fine scales, as Butterflies and Moths.

LEPORINE. Pertaining to, or having the nature or qualities of the hare.

LETHARGIC. Preternaturally inclined to sleep.

LEVIGATE. Without any partial elevations or depressions.

LIBIDINOUS. Lustful.

LIGAMENT. A strong compact substance, softer than a cartilage, but harder than a membrane, serving either to bind one bone of an animal to another, or to connect the valves in bivalve shells. "There is another substance," says Sowerby, "called by Gray the *cartilage*, which is elastic and of a condensed fibrous structure, placed within the ligament, either close to it, or at a more interior part of the shell; it is sometimes contained in a pit formed for its reception, in the centre of the hinge. This substance being elastic, keeps the valves open, unless drawn together by the counteracting force of the adductor muscles. When conchologists speak of a shell as having the ligament external, the real meaning is that these two substances are so close together, as in appearance to constitute one body."

LIGAMENTAL. LIGAMENTOUS. Of the nature of a ligament; as a *ligamentous* membrane.

LIGNEOUS. Composed of a hard unelastic substance like *wood*.

LIGNIFORM. Resembling wood.
LIGNITE. Fossil or bituminous wood.
LIGULA. The terminal or apical portion of the *labium* in insects.
LIGULIFORM. When the tongue of an insect emerges from the labium, is short, flat, and not concealed within the mouth. Ex. *Vespa* and many *Hymenoptera*.
LILAC. Of a colour resembling the flowers of the lilac.
LILIACEOUS. Lily-like, or pertaining to lilies.
LIMB. A projecting member of the body; as, an arm or a leg. Also, a term used for the disc of bivalve shells.
LIMBLESS. Destitute of limbs.
LINEAL. Allied by direct descent. In the direction of a line.
LINEAR. Narrow and of the same width throughout.
LINEATED. Having lines on the surface.
LINES OF GROWTH. (In conchology.) The concentric striæ or lines, formed by the edges of the successive layers of shelly matter deposited by the animal, by which it increases the shell.
LINGUA. The tongue of insects, attached to the inner surface of the lower lip.
LINGUADENTAL. Formed or uttered by the joint use of the tongue and teeth.
LINGUAFORM. In the shape of a tongue.
LINGUIFORM. When the tongue of an insect is quite distinct from the labium, usually retracted within the mouth, short, and shaped something like a vertebrate tongue.
LIPS. (In conchology). The two sides of the aperture of spiral shells: that which joins the columella is the *inner*, and that part of the circumference opposite is called the *outer* lip.
LIQUEFIABLE. That may be melted, or changed from a solid to a liquid state.
LIQUESCENT. Becoming fluid.
LITHOCARP. Petrified fruit.
LITHODENDRON. A name sometimes given to coral on account of its resembling a petrified branch.
LITHOXYLE. Petrified wood; wood converted into stone.
LITTORAL. Belonging to, or growing on the shore.
LITUITE. A fossil shell.
LIVID. A pale purplish brown; the colour of a bruise.
LOBATED. Rounded at the edges.
LOBED. Having lobes, or broad finger-like divisions.
LOBULE. A small lobe.
LOINS. The space on each side of the vertebræ, between the lowest of the false ribs and the upper portion of the haunch bone (*os ilium*).
LONGEVAL. LONGEVOUS. Long-lived.
LONGEVITY. Great length of life.
LONGIMANOUS. Having long hands.
LONGITUDE. The distance of any place on the globe from another place, eastward or westward.
LONGITUDINAL. Extending in length.
LOOMING. Appearing above the surface, or indistinctly, at a distance.
LOPHOBRANCHIATE. Belonging to the *Lophobranchii*, an order of bony Fishes, mostly of a small kind, distinguished by their gills being in tufts, and generally also by the body being covered by shields or small plates, which give it an angular form.
LORE. The space between the bill and the eye, which in some birds is bare, but is more generally covered with feathers.
LORICATE. LORICATED. Covered or plated over; covered with a double series of oblique scales like a coat of mail.
LUBRICATE. To make smooth or slippery.
LUBRICOUS. Slippery as if lubricated.
LUBRIFACTION. The act of making smooth.
LUCIFEROUS. Giving light.
LUCIFORM. Resembling light.
LUMBAR. Pertaining to the loins. The *lumbar region* is the posterior portion of the body between the false ribs and the upper edge of the haunch bone.
LUMINOUS. Bright; shining; emitting light.
LUNAR. Measured by the revolutions of the moon.
LUNATED. LUNIFORM. In the shape of a crescent.
LUNISOLAR. Compounded of the revolutions of the sun and moon.
LUNULE. A crescent-like mark or spot, situated near the anterior and posterior slopes in bivalve shells.
LURCHER. A dog that lies in wait and watches for his game.
LURID. Of a dirty yellow colour; yellow with some mixture of brown.
LUSTROUS. Of a shining or glossy appearance, like silk.
LUTARIOUS. Living in mud; pertaining to, or being of the colour of mud.
LUTEOUS. Deep yellow with a tint of red. The colour of the yolk of an egg.
LUTULENT. Muddy; turbid; thick.
LUXATED. Put out of joint; dislocated.
LYMNITE. A kind of freshwater snail found as a fossil.
LYMPH. A colourless fluid in animal bodies, separated from the blood and contained in certain vessels called *lymphatics*.
LYMPHDUCT. A vessel of animal bodies which contains the lymph.
LYRATE. LYRATED. Divided transversely into several jags, the lower ones smaller and more remote from each other than the upper ones.

MACERATION. The process of making thin or lean by wearing away; or the operation of softening and almost dissolving by steeping in a fluid.
MACRODACTYLOUS. Furnished with long toes adapted for traversing floating leaves and aquatic herbage.
MACROCOSM. The universe, or the visible systems of worlds; opposed to MICROCOSM, or the world of man.
MACROURA. The tribe of decapod Crustacea which have long tails, as the lobster.
MACROUROUS. Pertaining to the crustaceans above designated.
MACULAR FASCIA. A band consisting of distinct spots, as seen on the wings of some insects.
MACULATED. Spotted; stained.
MACULA. A spot; a roundish but indeter-

ped spot, not elongated in any

darked with *macula*, as above

The science which describes animals, whether defended by tirely naked.

OTOUS. Belonging to the *ptā*, the name given to the division of *Osseous Fishes*; the hich are distinguished by the g soft and cartilaginous. They nto three sections. 1. *Abdo-* which the ventral fins are the abdomen, far behind the as in the Carp, Salmon, and es. 2. *Subbrachiales*; in which fins are situated immediately pectorals, and the pelvis is the bones of the shoulder; as ish, Haddock, Flounder, &c. which the ventrals are want- ie Eel.

ED. Having soft jaws without n applied to several extensive es, which are wholly destitute their jaws, but have them ir throats, near the orifice of

OUS. An epithet applied to insects: from *Malacostraca*, a division of the class *Crus-* ling those which are covered softer than the shell of a mol- der than the horny integument *ostracous*.

paps or breasts.

The class of animals which their young.

The science which has for its tudy and classification of all onging to the class *Mamma-*

Having breasts and nou- young by the milk therein se-

Having the shape or form of

When the last joint of the y short, smaller than the pre- and retractile within it.

Having little globes like term applied to the apex of a t is rounded like a teat. This o applied in anatomy to two berances, like nipples, found re ventricles of the brain, and of the temple bone.

The upper and under parts of birds. The instruments of pplied to birds and insects. andible is restricted in ento- the upper and outer pair of

Belonging to the jaw.

s. The insects whose mouths l with jaws for the purpose of

UM. When the under jaws of hard and horny, and shaped er jaws.

e. The act of chewing or

MANGE. The scab or itch in dogs, cattle, and other beasts.

MANNERS. Habits and mode of life.

MANTLE. The external soft contractile skin of the Mollusca, which covers the viscera and a great part of the body like a cloak.

MANIFORM. When the *palpi* or feelers of an insect are chelate or furnished with a finger and thumb.

MARITIME. Bordering on or situated near the sea.

MARE. The female of the horse, or equine genus of quadrupeds.

MARGARITACEOUS. Pearly.

MARGARITIFEROUS. Pearl-bearing; applied to shells which form pearls; as *Melangrina Margaritifera*, or Pearl-bearing Oyster.

MARGINAL. Near the margin or edge. When applied to the wings of insects it denotes open areolets that terminate in the margin.

MARGINATE. MARGINATED. Having a prominent margin or border.

MARIGENOUS. Produced in or by the sea.

MARINE. Belonging to or found in the sea.

MARMORATE. So painted with veins, streaks, and clouds, as to resemble marble.

MARMOREAN. MARMORACEOUS. Made of or encrusted with marble.

MARSUPIAL. A term designating those animals which are provided with a tegumentary pouch, in which the embryo is received after birth, and protected during the completion of its development.

MARSUPIALIAN. Belonging to the class *Marsupialia* (which see).

MASCULINE. Robust; strong; having the qualities of a man.

MASTICATE. To chew food; to grind food with the teeth, and prepare it for swallowing and digestion.

MASTIGIA. Two anal organs in the larvæ of *Cerura Vinula*, exserting from their apex a retractile flexible thread, with which they endeavour, by lashing their sides, to drive away the *Ichneumons*.

MASTOID. Resembling the nipple or breast; as, the *mastoid* muscles.

MATE. The male or female of animals which associate for propagation and the care of their young.

MATRIX. MATRICE. The womb, or cavity in which the fœtus of an animal is formed and nourished till its birth.

MATTER. The substance of which all bodies are composed; and is of two kinds, solid and fluid. "In its solid form matter is the element of which the systems of organs are composed; and organs are the instruments by which functions are performed: in all animals there are seven systems of organs to perform seven series of functions. The seven systems of organs and their respective functions are these:—*bones*, for support; *muscles*, for motion; *air-tubes*, for respiration; *blood-vessels*, for circulation; *alimentary canal*, for digestion; *nerves*, for sensation; and the organs of the *sexes*, for reproduction."—Newman on the Physiology of Insects.

MATURE. Perfected by time or natural growth.

MAXILLÆ. The second or lower pair of jaws in insects, distinguished by bearing feelers.

MAXILLARY. Pertaining to the jaw.

MAXIPALPI. The feelers of the maxillæ.

MEDIAL. Placed in the middle.

MEDIAN. Having reference to the middle line of the body.

MEDICATED. Prepared or furnished with any thing medicinal.

MEDICAMENT. Any healing application.

MESOPECTORAL. Pertaining to the mid-legs of insects, which are affixed to the *mesopectus*.

MEDULLA OBLONGATA. The oblong medullary column at the base of the brain, from which the spinal chord or marrow is continued.

MEDULLAR. MEDULLARY. Consisting of marrow.

MELICEROUS. Consisting of matter like honey.

MELLIFEROUS. Producing honey.

MEMBRANACEOUS. MEMBRANOUS. Composed of delicate transparent membranes, as the wings of insects: consisting of membranes.

MEMBRANIFORM. Having the form of a membrane.

MENTUM. The anterior part of the *gula*, immediately adjoining the *labium*.

MEPHITIC. Foul; pestilential; destructive to life.

MERETRICIOUS. Having a gaudy but deceitful appearance.

MERMAID. A fabulous marine animal, said to resemble a woman in the upper parts of the body, and a fish in the lower part.

MESOGASTRIC. The term applied to the membrane by which the stomach is attached to the abdomen.

MESONOTUM. The upper surface of the *mesothorax*, or middle part of that half of the segment which covers the back.

MESOPLEURA. The lateral *surfaces* of the *mesothorax*.

MESOPODES. The middle pair of legs.

MESOSTERNUM. The sternum of the *mesothorax*, or middle part of that half of the segment which covers the breast.

MESOTHORAX. The intermediate of the three segments which form the thorax of an insect, bearing the posterior wings and legs.

METACARPUS. In anatomy; the part of the hand between the wrist and the fingers.

METAMORPHOSIS. Change of form or shape; as the metamorphosis of an insect from the chrysalis state into a winged animal.

METAMORPHOTIC. A term employed to denote those insects which, during their state of existence, undergo one or more changes or transformations.

METANOTUM. The upper surface of the *metathorax*.

METAPEDES. The hind legs of insects.

METAPLEURA. The lateral *surfaces* of the *metathorax*.

METAPODION. The seventh segment in insects.

METASTERNUM. The under surface of the metathorax.

METATHORAX. The hindmost of the three segments which form the thorax in insects.

METICULOUS. Very timid.

MICROSCOPIC. Visible only by the aid of a microscope; as, a microscopic insect.

MIGRATE. To pass or remove from one region or climate to another; as, certain species of birds migrate in autumn to a warmer climate for a temporary residence.

MIGRATORY. Removing or accustomed to remove from one climate to another; as *migratory* birds.

MILLEPORE. A genus of lythophytes, of various forms, which have the surface perforated with little holes or pores, or even without any apparent perforation.

MILLEPORITE. Fossil millepores.

MIMIC-BEETLES. [See HISTERIDÆ.]

MIND. An essential element in the composition of every animal. Though it can neither prevent the existence, or change the characters of matter, motion, or energies, (the other essential elements,) it takes cognizance of causes, and provides for consequent effects, before the other elements can obey its behests. "Of the connexion of mind with the organs which it commands," says Mr. Newman, "we know nothing: mind itself is only known by its effects; its commands are carried by the nerves; a fact ascertained by separating a nerve; after which separation, the mind no longer controls the parts to which that nerve extended its branches." [See NERVES.]

MINIATOUS. Of the colour of red lead.

MIOCENE. The tertiary period, in which a small portion of fossil shells are of the recent species.

MONOTHALAMOUS. A term applied to the shells of such Mollusca as have only one chamber for the reception of the animal, like that of the Whelk.

MOLARES DENTES. The molar teeth, or grinders.

MOLARES GLANDULÆ. The molar glands: two salivary glands situated on each side of the mouth, the excretory ducts of which open near the last molar tooth.

MOLECULE. The smallest particle into which a mass can be conceived or divided.

MOLECULES. Microscopic particles.

MOLEHILL. A little hillock or elevation of earth thrown up by moles working underground.

MOLLUSCOUS. Pertaining to or partaking of the properties of the class of animals termed *Mollusca*, which form the primary division of the Animal Kingdom.

MOMENTUM. The quantity of motion in a moving body.

MONAD. The genus of the most minute and simple microscopic animalcules, and shaped like spherical cells.

MONOBEL. An animal of a raised breed.

MONILIFORM (antennæ). Having each joint oval or globose, resembling a necklace.

MONOCULAR. Having but one eye.

MONOCULE. An insect with only one eye.

MONODACTYLOUS. Having one finger or toe only.

MONOGAMOUS. Living with one mate or partner; opposed to *polygamous*.
MONOGRAPH. An account or description of a single thing or class of things.
MONOMEROUS. A term denoting that the trunk of an insect has no suture or segment; or that the *trochanter* consists of only one joint.
MONOMYARY. A bivalve whose shell is closed by one adductor muscle.
MONOTHALMOUS. One-chambered; an epithet applied to shells when the chamber is not divided by partitions.
MONSTER. An animal produced with a shape or parts that are not natural.
MORPHOLOGICAL. Relating to the modifications of form which the same organ undergoes in different animals.
MORTAL. Subject to death; destructive to life.
MOSCHATE. Having a scent resembling musk.
MOSS-CLAD. Covered or overgrown with moss.
MOTATORIOUS. Pertaining to the *motatorii*, those legs which, when an insect is at rest, are in a perpetual vibratory motion.
MOTORY (nerves). The nerves which control motion.
MOTTLED. Clouded or spotted with various colours.
MOUSE-COLOURED. Black with a small proportion of yellow: the colour of the common mouse.
MUCILAGE. The liquor which moistens and lubricates the ligaments and cartilages of the articulations or joints in animal bodies.
MUCILAGINOUS. Moist, soft, and lubricous; partaking of the nature of *mucilage*.
MUCRO. A short, stout, sharp-pointed process.
MUCRONATE. Ending in a sharp rigid point.
MUCRONATE (antennæ). When they terminate in a short point or mucro.
MUCUS. A viscid fluid secreted by the *mucous membrane*, which it serves to moisten and defend. It covers the lining membranes of all the cavities which open externally, as the mouth, nose, lungs, intestinal canal, urinary passages, &c. The word *mucus* is also sometimes applied to other animal fluids of a viscid quality, as the synovial fluid which lubricates the joints.
MULATTO. The offspring of a negress by a white man, or of a white woman by a negro.
MULTANGULAR. Having many angles.
MULTICAVOUS. Having many holes or cavities.
MULTIFID. Cleft into many divisions by linear sinuses.
MULTIFORM. Having many shapes, forms, or appearances.
MULTIGENEROUS. Consisting of many kinds.
MUTILATED. Deprived of a limb or some essential part.
MULTILOCULAR. Having many cells or chambers: consisting of several divisions.
MULTIPAROUS. Producing many at a birth.
MULTIPARTITE. Divided into more than four parts.
MULTISECT. When an insect appears to have no distinct trunk or abdomen, but is divided into numerous segments.
MULTIVALVE. A shell composed of many pieces or valves.
MULTIVALVULAR. Having many valves.
MULTOCULAR. Having many eyes.
MURICATE. MURICATED. In insects, when the surface is covered with sharp, thick, but not close, elevated points or pustules. In shells, when clothed with sharp spines.
MURINE. Pertaining to the genus *Mus*.
MULTIARTCULATE. Consisting of many joints.
MUSCLE. An animal tissue composed of little bundles of fibres, inclosed in a thin cellular membrane, and serving as the organs of motion. There are *voluntary* and *involuntary* muscles; and all are susceptible of contraction and relaxation. The voluntary muscles are those over which the will exercises a direct control, as in all the motions of the limbs, eyes, organs of speech, &c.; and the involuntary, those over which the will has no immediate and constant control, but form the muscular systems of organic life, as the heart, the muscular coat of the stomach, &c. The muscles of each animal are disposed in number and direction according to the movements which it has to execute; and when these movements require to be effected with some vigour, the muscles are inserted into hard parts, articulated one over another, and may be considered as so many levers. These parts are called bones in the vertebrated animals, where they are internal, and formed of a gelatinous mass, penetrated with molecules of phosphate of lime. In molluscs, crustaceans, and insects, where they are external, and composed of a calcareous or corneous substance that exudes between the skin and epidermis, they are termed shells, crusts, and scales. The colour of the muscles is dependent partly on the blood which they contain, but chiefly on a peculiar colouring matter, very similar to that of the blood, which is fixed in their tissue. Their colour is distinctly though remotely connected with the quantity and condition of red blood in the system, and its depth is one of the best signs of robustness and full health. Thus in all quadrupeds and birds the muscles are more or less red, and the colour is deepest in the parts which are most actively employed, but pale and scarcely perceptible in those which have not been frequently exerted. In amphibia, which have less red blood than mammalia and birds, the muscles are usually pale; in fish, which have still less, they are, with the exception of the heart, and those which move the fins and are particularly exerted, (except in a very few instances,) quite white. In animals of a still lower order, the muscles are all quite white." The intensity of muscular contraction, that is, the degree of power with which the fibres draw themselves together, is regulated by the action of the brain; but a very great cerebral energy is rarely found united with that disposition of the muscular fibres which is necessary to produce intense con-

tructions. The ends of the muscles are fastened to the bones which they move, and when they act in opposition to each other, they are called *antagonists*. An almost infinite variety of arrangement is found in the muscular fibres adapted to the especial purpose which each muscle has to fulfil, whether it be chiefly strength of action, or rapidity or extent of motion; and all are guided by the nicest mechanical rules. It is also constantly found that where power is lost, a corresponding gain of velocity or extent of motion, or of convenience and compactness of form, and readiness of action, is obtained.

MUSCULAR IMPRESSIONS. The marks or indentations in the shells of acephalous bivalves, which indicate the insertion of the muscles, by which the animal is attached to its shell.

MUSEUM. A building appropriated as a repository of things that have an immediate relation to science and the arts. The noble edifice in Russell Street, London, most appropriately called the *British Museum*, is of first-rate magnitude, and, to say nothing of its vast and unequalled library, is replete with the wonders of Nature and Art, collected from every part of the globe, and arranged with consummate skill. This magnificent collection of all that is valuable and interesting is alike worthy of the nation whose name it bears, of those distinguished men who have contributed to its treasures, and of the *servans* to whose care and management the whole is entrusted.—It is highly gratifying to be able to add, that at the present time a most laudable spirit exists, among all classes in this country, to imitate the example of the metropolis; and we accordingly hear of Museums, already established or being in embryo, in almost every town in the United Kingdom.

MUSTELINE. Pertaining to the weasel, or animals of the genus *Mustela*.

MUTILATE. When the base-covers of an insect appear *unnaturally* short or curtailed as if mutilated.

MUZZLE. The mouth and parts immediately adjacent to it.

MYELENCEPHALA. The primary division of animals characterized by a brain and spinal marrow.

MYOGRAPHY. A description of the muscles.

MYRIAD. An immense but indefinite number.

MYRIAPOD. Having two hundred legs or more; an insect belonging to the order *Myriapoda*, which are characterized by their numerous feet.

MYTILITE. A petrified shell of the genus *Mytilus*.

NACRE. Mother-of-pearl; the white shining substance which constitutes the interior surface of a shell producing a pearl.

NACRED. NACREOUS. Having a pearly lustre; like mother-of-pearl.

NASCENT. Beginning to exist or to grow; coming into being.

NATANT. Swimming, or floating on the water.

NATATORIOUS. When the legs of insects are compressed and ciliated, and formed for swimming. Also, when the abdomen is terminated by flat foliaceous appendages, or the tail is ciliated on each side with dense parallel hairs, which assist the insect in *swimming*.

NATATORY. Formed for swimming; enabling to swim.

NATURE. This word is variously used in works on Natural History. It sometimes denotes the qualities which a being derives from birth, in opposition to those which it may owe to art; at other times, the aggregate of beings which compose the universe; and sometimes, again, the laws which govern these beings. In this latter sense it has become customary to personify Nature, and to employ the name for that of its Great Author.

NATURAL. Produced by or derived from nature.

NATURALIST. One that is versed in Natural History.

NATURAL PHILOSOPHY. That branch of philosophy which treats of nature and its laws.

NAUTILITE. A fossil Nautilus.

NAVICULAR. When two sides meet and form an angle like the outer bottom of a boat; boat-shaped.

NEBULÆ. Cloudy or dusky specks.

NEBULOSE. NEBULOUS. Resembling a small cloud or collection of vapours.

NECROMORPHA. Insects in which the pupa has the mouth and organs of locomotion detached from the body, but so enveloped in a case or sheath, that it can employ neither. This group contains the *Hymenoptera* and *Coleoptera*.

NECTAREOUS. Resembling nectar; very sweet and pleasant.

NECTARY. The melliferous part of a flower; sometimes it is in the form of a horn or spur; sometimes in that of a cup; whence it is called the *honey-cup*.

NEIGH. To utter a sound, like the horse, expressive of want or desire.

NEGRO. A native or descendant of the black race of men in the more southern parts of Africa.

NEMATOIDEA. The intestinal worms, which are long and filiform.

NEMATONEURA. A name applied to the higher division of Cuvier's *Radiata* by Professor Owen.

NEOLOGIST. One who introduces or employs new words in any science.

NERVES. The nerves are the organs of sensation: they originate in the brain, and are prolongations of the medullary substance of the brain, which ramify and extend over the whole body; and they consist of fine tubular filaments, which are arranged nearly parallel to each other in sheaths of fibrous tissue. "There are two distinct systems of nerves; one of which is connected with the brain and the spinal chord, and are media of sensation and of voluntary motion. They are termed the *nerves of animal life*, or the cerebro-spinal nerves. The other system is only in communication with the brain and spinal

chord, or with the cerebro-spinal nerves, by very small filaments, and they have numerous ganglions throughout their course; they preside over the nutritive functions, upon which the mind has no direct influence: these are the nerves of *organic life*, or *ganglionic* or great *sympathetic* nerves. The cerebro-spinal nerves convey impressions from their extremities to the brain, and they also convey the influence of the will from the brain to the voluntary muscles; these passing and repassing, or receptive and remissive influences, are conveyed by distinct sets of nervous filaments, which, however, are generally enclosed in the same sheath, and therefore appear to form a single nerve."—*Brandt.*

"Experience has shown us," observes Mr. Newman, "that, on the brain of invertebrated animals being separated from the body, or even greatly injured, both sensation and active vitality at once cease; but in insects the separating of the head or of the parts containing either of these masses of nerves, produces no immediate or ascertainable effect on sensation or vitality. This shows us, *first*, that mind or volition is, in vertebrated animals, situate in the brain; *secondly*, that in insects it is not confined to any part. These conclusions lead to the probability of a third, that brain and nerve are but different states of the same system of organs. The vitality, therefore, concentrated in a brain, may be diffused through the nerves when there is no brain, and each mass of nerves may be the seat of that small power of mind which insects possess."

NERVURES. The delicate frame-work of the membranous wings of insects.

NEURILEMMA. The membrane which surrounds the nervous fibre.

NEUROLOGY. The science of the nervous system, or a description of the nerves.

NEUROPTEROUS. Belonging to the *Neuroptera*, an order of four-winged insects, characterized by their numerous nervures, like those of the dragon-fly.

NEUROSE. Wings of insects that have nervures besides the marginal ones.

NEUROTOMY. The art or practice of dissecting the nerves.

NIBBLE. To bite at; as, fishes *nibble* at the bait. A little bite, or seizing to bite.

NICTATING (membrane). The thin membrane that covers and protects the eyes of some animals, without entirely obstructing the sight.

NIDAMENTAL. Relating to the protection of the egg and young, especially applied to the organs that secrete the material of which many animals construct their nests.

NIDIFICATION. The act or operation of building a nest, and the hatching and feeding of young in the nest.

NIDULATION. The time of remaining in the nest.

NIDUS. A nest or repository for the eggs of birds, insects, &c.

NOCTIDIAL. Comprising a night and a day.

NOCTILUCOUS. Shining in the night.

NOCTIVAGANT. Wandering or prowling about by night.

NOCTURNAL. Pertaining to the night, as the *nocturnal* habits of certain animals which usually come forth from their retreats and obtain their prey during the night.

NODOSE. Having one or more knobs or swellings. The word *Nodose* is also applied to the *antennæ* of insects when they have one, two, or more joints larger than those which precede or follow them.

NODULAR. Pertaining to, or resembling, a nodule or little knotty lump.

NODULE. A little knot-like eminence.

NOMADIC. Wandering for the sake of pasturage; pertaining to a pastoral life, and roving from place to place with herds of cattle.

NOMENCLATURE. The names of things which are appropriated to any branch of science.

NONAGE. Under adult age.

NONDESCRIPT. Anything that has not been described. Thus an animal newly discovered is called a *nondescript*.

NONFOSSILIFEROUS. Not producing fossils; of a nature not to convert into fossils.

NORMAL. According to rule; natural.

NOSTRILS (*of birds*) are said to be *linear*, when they are extended lengthwise in a line with the bill, as in Divers, &c.; *pervious*, when they are open, and may be seen through from side to side, as in Gulls, &c.

NOTAL. Belonging to the back.

NUCLEATED. Having a nucleus or central particle: applied to the elementary cells of animal tissues, the most important properties of which reside in the nucleus.

NUDIBRACHIATA. The Polypes whose arms are not clothed with vibratile cilia.

NUDIBRANCHIATA. An order of Gasteropods in which the gills are exposed.

NUMMULITE. Fossil remains of a chambered shell of a flattened form, formerly mistaken for money.

NUTRIENT. Nourishing; producing growth.

NYMPH. The pupa or chrysalis; the second state of an insect, passing to its perfect form.

OBESE. Unnaturally large and distended, as if from disease or too much food.

OBLIQUE. Running sideways: when the longitudinal line is cut through at *acute* angles.

OBLITERATE. A term in entomology applied to impressions and elevations when almost effaced.

OBLONG. Longer than broad: the *longitudinal* diameter being *more* than *twice* the length of the *transverse*, and the ends varying, or rounded.

OBLONG-OVATE. Between oblong and egg-shaped.

OBSCURE. A surface which reflects the light but little.

OBSOLETE. Partially indistinct; not well-defined; not fully developed; as the faint striæ on certain shells.

OBTRUNCATED. Lopped off; deprived of a limb.

OBTUSE. Blunt; not pointed or acute; dull; obscure: terminating bluntly, but within the segment of a circle.

Ophiomany. When the squalleon of an insect overhangs the metathorax.

Opistome. When an object is viewed with its head towards you.

Occiput. That part of the skull which forms the hind part of the head.

Ocellated. A term applied to eye-like spots; formed with the figures of little eyes.

Ocellus. An eye-like spot in the wings of many Lepidoptera, and consisting of an oval of different colours, including a central spot or pupil. *Blind Ocellus* is one without the pupil. *Specious Ocellus*; a circular spot without any defined iris or pupil. *Simple Ocellus*; when the ocellus consists only of iris and pupil. *Compound Ocellus*; when it consists of three or more circles. *Nictitant Ocellus*; when the ocellus includes a lunular spot of a different colour. *Pennated Ocellus*; when an ocellus has a transparent spot. *Digitate Ocellus*; a pennated ocellus divided by a transverse line. *Double Ocellus*; when two ocelli are included in the same circle or spot; and when such ocelli join each other they are termed twin ocelli. *Semicilicorous Ocellus*; an ocellus with a smaller near it. The simple eyes of insects are small, transparent, semi-globular lenses, generally three in number, and arranged in a triangle on the crown of the head. Though their use has never been satisfactorily proved, enough has been ascertained for Entomologists to agree in considering them organs of vision. The eyes of larvæ, spiders, and some other annulosa are simple ocelli, arranged in groups. They are also called stemmata.

Ochraceous. Of a dull brownish yellow colour; approaching to the colour of ochre.

Octodentate. Having eight teeth.

Octopus. In Entomology, separated into eight segments.

Octonocular. Having eight eyes.

Octopus. Having eight legs.

Octoradiated. Having eight rays.

Oculi (oculus.) The eyes of insects are generally *compound*, i. e. formed of facets or retinate lenses, which are hexagonal, and vary from 50 to 20,000 in a single eye; every one of them receiving the image of an object, and appearing to correspond with the crystalline lens of the human eye.

Oculiform. Shaped like the eye.

Odoriferous. Diffusing fragrance.

Œsophageal. Pertaining to the gullet.

Œsophagus. The anterior extremity of the alimentary canal; the gullet.

Officinal. Pertaining to drugs, perfumes, &c., usually kept in apothecaries' shops.

Oleaginous. Unctuous; having the qualities of oil.

Olfactory. Relating to the sense of smelling; as, olfactory nerves.

Olivaceous. Dull olive green, or green tinged with brown.

Olive. A brownish green, the colour of olives.

Omnigenous. Consisting of all kinds.

Omnivorous. Feeding indiscriminately or subsisting on all kinds of food.

Onychotheutha. The genus of calamaries armed with hooks or claws.

Oolite. Egg-stone; an extensive group of secondary limestones composed of rounded particles, like the roe or eggs of a fish.

Opalescent. Reflecting a coloured lustre from a single spot.

Opaline. A bluish white reflecting the splendour of the opal.

Opaque. Impervious to the rays of light; not transparent; a surface which does not reflect the rays of light at all.

Operculate. When the eyes of insects are covered by an operculum.

Operculated. Furnished with a lid or cover.

Operculiform. Having the form of a lid or cover.

Operculum. A lid or cover; applied to the horny plate which closes certain univalve shells; also to the covering of the gills in fish.

Ophidian. Resembling or pertaining to serpents; designating an order of vertebrate animals destitute of feet and fins.

Ophiologist. A person versed in ophiology, or the natural history of serpents.

Ophiology. That part of Natural History which treats of serpents.

Ophiomorphous. Having the form of a serpent.

Ophiophagous. Eating or feeding on serpents.

Orange. A colour compound of equal parts of red and yellow.

Orbicular. Spherical; in the form of an orb.

Orbiculate. A depressed globe, whose horizontal section is circular, and vertical oval.

Orbit. The skin which surrounds the eye. It is generally bare, but particularly in the Parrot and the Heron.

Orbital. Pertaining to the orbit of the eye.

Order. A subordinate division of the animal kingdom, bearing the same relation to a class which this latter does to a kingdom; so that a class is made up of orders, in the same manner as a kingdom is made up of classes.

Ordinate. When spots, punctæ, &c. are placed in rows; thus we say ordinate-punctate, ordinate-convolute, &c.

Organ. A natural instrument of action or operation, or by which some process is carried on. Thus the arteries and veins of animal bodies are organs of the circulation of the blood; the lungs are organs of respiration; the nerves are organs of perception and sensation; the ears are organs of hearing; the tongue is the organ of speech.

Organic Bodies. Such as possess organs, on the action of which depend their growth and perfection; as in the case of animals and plants.

Organic Remains. All animal and vegetable substances which are dug out of the earth in a fossilized state.

Organization. Structure; suitable disposition of parts which are to act together in a compound body.

Organology. That branch of physiology which specially treats of the different or-

gans of animals, but more particularly those of the human species.

ORICHALCEOUS. A splendour intermediate between that of *gold* and *brass*.

ORIFICE. An opening; the mouth or aperture of a tube or other cavity.

ORNITHOLITE. A petrified bird.

ORNITHOLOGIST. A person who is skilled in the natural history of birds, who understands their form, structure, habits, and uses.

ORNITHOLOGY. The science which teaches the natural history and arrangement of birds; or, to use the definition of Cuvier, of vertebrated oviparous animals, with a double circulation and respiration, organized for flight. — For much general information on the habits, instincts, &c. of the feathered tribes, see the article "BIRDS."

ORTHOCERA. Extinct Cephalopods which inhabited long conical chambered shells like a straight horn.

ORTHOCERATITE. The name of certain fossil univalve shells, straight, or but slightly curved, arranged by Cuvier in the genus Nautilus.

ORTHOPTEROUS. Belonging to the *Orthoptera*, an order of insects with elytra and longitudinally folded wings.

ORYCTOGRAPHY. That part of Natural History in which fossils are described.

ORYCTOLOGY. That part of physics which treats of fossils.

OSSEOUS. Bony.

OSSIFICATION. To change from a soft animal substance into bone, or into a substance as hard as bone.

OSSIVOROUS. Feeding on bones.

OSTEOLOGICAL. Pertaining to a description of the bones.

OSTRACITE. An oyster-shell in its fossil state; or a stone formed in the shell, the latter being dissolved.

OVAL. Having the *longitudinal* diameter *twice* the length of the *transverse*, and the ends circumscribed by equal segments of a circle.

OVALIFORM. Having the *longitudinal* section oval, and the *transverse* circular.

OVARIOUS. Consisting of eggs; as *ovarious* food.

OVARY. OVARIUM. The part of a female animal in which the eggs are formed or lodged; or the part in which the fœtus is supposed to be formed.

OVATE. Shaped like the longitudinal section of an egg.

OVATE-OBLONG. Oblong in the shape of an egg, or with the end lengthened.

OVATE-SUBULATE. Having something of the form of an egg and an awl, but most tending to the latter.

OVICULAR. Pertaining to an egg.

OVIDUCT. A passage for the egg from the ovary.

OVIFORM. Egg-shaped; having the form or figure of an egg.

OVIGEROUS. A term applied to the parts containing or supporting eggs.

OVINE. Pertaining to sheep.

OVIPAROUS. That mode of generation which takes place by the exclusion of the germ from the body, in the form of an egg, and which is hatched after such exclusion.

OVIPOSITION. The act of excluding eggs from the abdomen, as an insect.

OVIPOSITOR. The organ in insects, which is often large and complicated, for the transmission of the eggs, during exclusion, to their appropriate place.

OVOID. Approaching to the shape of an egg.

OVOVIPAROUS. A term denoting that the eggs are hatched within the body of the animal, and that the young are excluded alive. The *marsupial* animals are examples of ovoviparous mammiferous quadrupeds; and the Viper, Rattlesnake, and Lizard among *reptiles*.

PABULAR. PABULOUS. Affording food or aliment.

PACHYDERMATOUS. Having a thick skin; an epithet applied to an order of animals, called *Pachydermata*, embracing all the hoofed quadrupeds which do not ruminate.

PALÆONTOGRAPHICAL. Pertaining to the description and illustration of fossil organic remains.

PALÆONTOLOGY. The history of ancient extinct organized beings.

PALÆOZOIC. A term to denote those rocks which contain the fossil remains of the earliest inhabitants of the globe. They are divided by geologists into the Cumbrian, Silurian, and Devonian systems.

PALATAL. Pertaining to the palate.

PALATE. The roof or upper part of the mouth.

PALATIFORM. When the tongue of an insect forms the inner surface of the *labium*, but is not separate from it.

PALEOUS. Resembling chaff.

PALLEAL IMPRESSION. The mark or groove formed in a bivalve shell by the muscular attachment of the mantle, which, being always found near the margin of the shell, is sometimes termed the *marginal* impression.

PALLEAL. Pertaining to the mantle of the Mollusca.

PALMATED. Entirely webbed; as the *palmated* feet of certain aquatic birds.

PALMIPED. Relating to the *Palmipedes*, an order of birds having the toes connected by a web or membrane, and thus the feet fitted for swimming.

PALPI. The organs of touch developed from the maxillæ and labium of insects.

PALPIFORM. Resembling in shape the palpi or feelers of insects.

PAPAVEROUS. Of the nature or quality of poppies.

PAPILLÆ. Small dots or soft eminences, generally adapted for delicate sensation.

PAPILLARY. PAPILLOUS. PAPILLOSE. Having the surface covered with dots, pimples, or small tubercles.

PAPILLULATE. Beset with many papillules.

PAPILLULE. A tubercle or variole with an elevation in its centre.

PAPYRACEOUS. Of the consistency of paper.

PARALLELISM. Resemblance, equality of state.

RADCLIFFE.

PARASITIC. PARASITICAL. Existing on or inhabiting some other body.

PARENCHYMA. A spongy substance contained in the interstices between the blood-vessels of the viscera.

PARENCHYMOUS. Spongy; soft; porous.

PARIETAL (*bones*). The bones which form the sides and upper part of the skull.

PAROTID. Denoting certain salivary glands below and before the ears, or near the articulation of the lower jaw.

PAROXYSM. An exasperation or exacerbation of a disease.

PARTITE. Divided to the base.

PASSERINE. Pertaining to the *Passeres*, the order of birds to which Sparrows belong.

PASTURE. PASTURE-LAND. Ground covered with grass appropriated for the food of cattle.

PATELLATE. Dilated and shaped something like a *patella* or platter.

PATELLIFORM. Shaped like a dish.

PATERIFORM. When the joints are somewhat dilated and very short, shaped something like a shallow bowl.

PAVONINE. Resembling the tail of a peacock.

PEAHEN. The hen or female of the peacock.

PECTINAL. Pertaining to a comb.

PECTINATED. Resembling the teeth of a comb.

PECTINIBRANCHIATA. The order of Gasteropods in which the gills are shaped like a comb.

PECTINIFORM (antennæ). When the joints are furnished on one side with slender processes resembling the teeth of a comb.

PECTORAL. Pertaining to the breast; as the *pectoral* muscles. The *pectoral* fins of a fish are situated on the sides of the fish, behind the gills.

PECTUNCULATE. A term applied to the maxillæ of insects, when the stipes below the feeler has a row of minute spines set like the teeth of a comb.

PEDICLE. The support of the Lepas Anatifera and its corresponding species, by which they are attached to wood, &c.

PEDIFORM. Shaped like a foot.

PEDUNCLE. A footstalk or tube on which anything is situated.

PEDUNCULATED. Attached to external objects by a hollow fleshy tube, called the peduncle. The term *pedunculated* is also applied to insects when they have the sixth segment slender and threadlike, as the wasp, &c.

PELAGIC. PELAGIAN. Belonging to the deep sea; as, *pelagian* shells.

PELLICLE. The skin or film.

PELTATE. Shield-shaped; orbicular and attached by a central pedicle.

PELVIS. The lower part of the abdomen.

PENDULOUS. Hanging; fastened at one end, the other swinging; as, the dewlap of an animal.

PENICIL. A small bundle of diverging hairs.

PENICILLATE. An epithet for a part which supports bundles of diverging hair.

PENSILE. Hanging; suspended.

PENTACRINITE. A pedunculated star-fish with five rays: they are for the most part fossil.

PENTANGULAR. Having five corners gles.

PERCOLATED. Filtered; passed t small interstices.

PERENNIBRANCHIATE. Relating to a of reptiles (the *Protei*, *Sirene*, &c.) are organized to live either on lan water, by possessing at the same ti lungs and gills.

PERFORATÆ (antennæ). When a po each joint is dilated and flattened, remaining portion being cylindri pears like a thread on which the parts are strung.

PERFORATED. Having holes, as if b a sharp instrument.

PERGAMENEOUS. Of the texture of ment: a thin tough substance in resembling parchment.

PERICARDIUM. The membranous ba surrounds the heart, and the arte venous trunks connected with it.

PERICRANIUM. A membrane cover outside of the cranium, and corres to the periosteum of other bones.

PERIOSTEUM. A nervous vascular me immediately investing the bones mals.

PERIOSTRACUM. The membrane an to scarf-skin, which covers shell.

PERISTALTIC. The vermicular contr and motions of muscular canals, alimentary and the circulating tube peristaltic motion of the intestines formed by the contraction of the and longitudinal fibres composin fleshy coats, by which the chyle is into the orifices of the lacteals, a excrements are protruded towa anus.

PERITONEAL. Belonging to the perit

PERITONEUM. A thin, smooth, in membrane investing the whole i surface of the abdomen, and, more completely, all the viscera contain

PERITREMA. The raised margin whi rounds the breathing-holes of scorp

PETALOID. Having the form of peta

PETIOLATE. Supported or suspend slender stalk.

PETRESCENCE. The process of ch into stone.

PETRIFACTIVE. PETRIFIC. Having p convert animal or vegetable sub into stone.

PHARYNGEAL. PHARYNGAL. Belong the *pharynx*.

PHARYNX. The opening into the gu

PHENOMENON (plu. *phenomena*). An which has existence in the natural as, the *phenomena* of heat, the *phe* of the heavenly bodies, or of ter substances.

PHOCENIC. Appertaining to the dolp

PHOSPHORESCENT. Shining in the like the glow-worm.

PHYSICS. Natural Philosophy in it extensive sense, comprehending Che Electricity, Hydrostatics, Meteo Pneumatics, &c. It is either Gen Particular.

PHYSIOLOGICAL. Relating to the pe and functions of living beings.

PHYTIVOROUS. Feeding on plants and herbage.
PHYTOPHAGOUS. Feeding on plants.
PICEOUS. Shining reddish black, the colour of pitch.
PILOSE. Covered with a thick down.
PINION. To confine by binding the wings. The joint of a fowl's wing, remotest from the body.
PINNATE. Shaped like a feather, or provided with fins.
PINNATIPED. Fin-footed; having the toes bordered by membranes.
PISCIFORM. Having the shape of a fish.
PISIFORM. Having the form of a pea.
PISTIL. In botany, an organ of female flowers adhering to the fruit for the reception of the pollen, supposed to be a continuation of the pith.
PISTILLACEOUS. Growing on the germ or seed-bud of a flower.
PITUITOUS. Consisting of mucus, or resembling it in qualities.
PLACENTA. The substance that connects the fœtus to the womb, and by which the circulation is carried on between the parent and the fœtus.
PLACENTAL. Pertaining to the substance that connects the fœtus to the womb.
PLANE. Perfectly level. When there is neither elevation nor depression.
PLANORBICULAR. Flat and circular.
PLANO-SUBULATE. Smooth and awl-shaped.
PLANTIGRADE. When the whole or part of the sole of the foot is placed flat on the ground in walking, as is the case with certain carnivorous mammalia.
PLASMA. The *liquor sanguinis*, or fluid part of the blood, in which the red corpuscles float.
PLASTRON. The under part of the shell of the crab and tortoise.
PLEIOCENE. The more recent tertiary strata, in which the major part of the fossil testacea belong to recent species.
PLEISTOCENE. The newest of the tertiary strata, which contains the largest proportion of living species of shells.
PLEXIFORM. In the form of net-work; complicated.
PLEXUS. A bundle of nerves or vessels interwoven or twined together.
PLICATE. PLICATED. Plaited; folded like a fan; applied to spiral plaits on the columella of some shells; also to the angular bendings in the margins of some bivalve shells.
PLICÆ. Folds of membrane.
PLUMBEOUS. The colour of lead.
PLUMIPED. Having feet covered with feathers.
PLUMULOSE. When the hairs branch out laterally like feathers.
PLUMOSE. Feathery; like a plume of feathers; or, having hair of a feathery appearance.
PNEUMATIC. Belonging to the air and air-breathing organs.
PODEON. The sixth segment in insects.
PODOPHTHALMA. The tribe of Crustacea in which the eyes are supported upon stalks.
POLLEN. *In botany, the* fecundating dust, *or farina, contained* in the anther of flowers, which is dispersed on the pistil in impregnation.
POLLINIFEROUS. Producing pollen.
POLLINOSE. Covered with a loose mea and often yellow powder, resembling pollen of flowers.
POLYGAMOUS. Not confined to one ma but pairing promiscuously; as is comm with certain birds.
POLYGASTRIA. The class of infusorial a malcules which have many assimilat sacs or stomachs.
POLYGENOUS. Consisting of many kinds.
POLYMORPHOUS. Having many forms.
POLYPHAGOUS. Feeding indiscriminatel all-devouring.
POLYPI. The class of radiated animals wh have many prehensile organs radiat from around the mouth.
POLYTHALAMOUS. Divided into seve chambers.
PORCATE. In entomology, a term denoti the presence of several parallel eleva longitudinal ridges.
PORCELLANEOUS. Pertaining to or rese bling porcelain; as, *porcellaneous* shells
PORCINE. Pertaining to swine.
PORE. A minute interstice in the skin of animal, through which the perspira matter passes to the surface or is excret
PORRECTED. When the head is promine and elongate.
POSTDILUVIAL. POSTDILUVIAN. Living happening posterior to the universal luge.
POSTERIOR. The hind limbs, &c. The in bivalve shells opposite to that in wh the ligament is placed.
POSTORBITAL. Pertaining to whatever situated behind the orbits.
POSTSCUTELLUM. The fourth section of upper surface of each segment in insect
PRASINOUS. Green with a mixture of yell
PRESCUTUM. The first section of the up surface of each segment in insects.
PRESTERNUM. The name of the pl nearest the head in the lower surface each segment in insects when it is divid into four plates.
PRECIPITOUS. Very steep; as a *precipit* hump on the back of an animal.
PREDATORY. Plundering; practising pine.
PREEN. To clean and dress the feathers, birds, to enable them to glide more eas through the air or water. For this pu pose they are furnished with two glands their rump, which secrete an oily substa into a bag, from which they draw it w their bill, and spread it over their feathe
PREHENSILE. Seizing; grasping; as, tails of some monkeys are *prehensile*.
PREMORSE. Terminating in an irregu truncate apex, as if bitten off.
PRETERNATURAL. Beyond the ordin rules of nature, or different from wha *natural*, but not supernatural.
PRETYPIFY. To prefigure.
PRIMARIES, or Primary Quills. The larg feathers of the wings; they rise from first bone.
PRIMITIVE. Original; primary; un rived.

PRIMORDIAL. Existing from the beginning.
PRISMOIDAL. Having more than *four* sides, and whose *horizontal* section is a polygon.
PROBOSCIDIFORM. Applied to any elongated appendange about the head.
PROBOSCIS. The name given to the flexible muscular tube, or prehensile organ formed by the prolongation of the nose, as is seen in the elephant. It is also an entomological term: the proboscis of insects being used by some to suck the juice from plants, and by others to suck the blood from animals.
PROCESS. Series of motions or changes in growth, decay, &c. in physical bodies; as, the *process* of decomposition. It is also used to denote any natural appendage or adnascent part of an animal for which there is no definite name.
PROCREATE. To engender and produce.
PROCREATIVE. Having the power to beget.
PRODUCTED. Disproportionately long.
PROGENY. Descendants of the human kind, or of animals in general.
PROJECTILE. A body impelled forward by force.
PROLAPSE. To fall down or out.
PROLEGS. The wart-like tubercles which represent legs on the hinder segment of caterpillars.
PRONE. When an object lies upon its belly.
PRONOTUM. The upper surface of the *prothorax*.
PROPODEON. The fifth segment in insects.
PROPEDES. The forelegs of insects.
PROSTERNUM. The under surface of the *prothorax*.
PROSTRATE. Lying with the body extended on the ground or other surface.
PROTELUM. The eleventh segment in insects.
PROTHORAX. The first of the three segments which constitute the thorax in insects.
PROTRUDED. Thrust forward or out.
PROTUBERANCE. Anything swelled or pushed beyond the surrounding surface; as, a swelling or *protuberance* on any part of the body.
PRUINOSE. When the splendour of the surface is somewhat obscured by the appearance of a bloom upon it, like that of a plum, but which cannot be detached.
PRURIGINOUS. Having tendency to itch.
PSEUDO-MORPHOUS. Not having the true form.
PSYCHICAL. Relating to the phenomena of the soul, and to analogous phenomena in the lower animals.
PTEROPODOUS. Pertaining to the *Pteropoda*, an order of the class Mollusca whose organs of locomotion consist of a pair of wing-shaped fins.
PUBERTY. The age at which animals are capable of procreating and bearing young.
PUBESCENT. Covered with very fine decumbent short hairs.
PULMOGRADE. The tribe of Medusæ which swim by contractions of the pulmonary disc.
PULMONARY. Pertaining to the lungs; affecting the lungs.
PULMONATA. The order of *Gasteropoda* that breathe by lungs.
PULVEROUS. PULVERULENT. Consisting of dust or powder.
PULVILLE. The soft cushions on the under surface of the joints of the tarsus in some insects.
PULVINATE. When in consequence of the prothorax being depressed in one place, it seems to puff out in another.
PULVINULI. A soft ball which some insects have at the end of the tarsi.
PUNCTATE. PUNCTATED. Full of small holes, or beset with many points.
PUNCTO-STRIATED. When the longitudinal impressed lines are punctured.
PUNCTULATED. When the surface has the appearance of having been thickly punctured with a pointed instrument, but which has only made impressions on it.
PUNCTURED. Pierced with a sharp point.
PUPA. An insect in the second stage of its metamorphosis. It is synonymous with *aurelia* or *chrysalis*,—words formerly in more general use than they are at present.
PUPIL. A little aperture in the middle of the iris and area of the eye, through which the rays of light pass to the crystalline humour, to be painted on the retina. The central spot on the *ocellus* in the wings of many Lepidoptera. It is called a *hastate pupil* when the pupil is a halbert-shaped spot, and a *suffusated pupil* when the pupil shades into another colour.
PUPIPAROUS. Pertaining to insects which bring forth their young in the pupa state.
PUPIVOROUS. Feeding on the larvæ and chrysalids of insects.
PURPLE. A colour compound of red and blue blended.
PURPURESCENT. Inclining to a purple colour.
PURULENT. Consisting of or resembling pus or matter.
PUTRESCENT. Pertaining to the process of putrefaction.
PYLORUS. The aperture which leads from the stomach to the intestine.
PYRAMIDAL. Whose *vertical* section is triangular, and *horizontal* quadrangular.
PYRIFORM. Pear-shaped.

QUADRATE. To agree or correspond with. Square. Quadrilateral with the sides *equal* and the angles *right* angles.
QUADRENNIAL. Occurring once in *four* years.
QUADRIARTICULATE. Consisting of four joints.
QUADRIDENTAL. Having four teeth.
QUADRIFID. Cleft in four parts.
QUADRIPARTITE. Consisting of four corresponding parts.
QUADRIPLICATED. Having four plaits or folds.
QUADRIVALVULAR. Having four valves.
QUADRUMANOUS. Having four hands.
QUADRUPED. Having four legs and feet. An animal having four legs and feet, as a horse, a lion, &c.
QUARRY. In falconry, the game which a hawk is pursuing or has killed. Among hunters, a part of the entrails of the beast taken, given to the hounds.
QUIESCENT. Being in a state of repose.

RACE. A particular breed.
RACEMOUS. Growing in racemes or clusters.
RADIAL. Pertaining to the radius or to the fore-arm of the human body; as, the *radial* muscles.
RADIATA. Animals in which the organs of sensation and motion are disposed like rays round a centre; the lowest primary division of the animal kingdom.
RADIATE. When a dot, spot, &c. appears to send forth rays, as the large blue area common to all the *wings* of *Papilio Ulysses*.
RADIATED (areolets). When the areolets are chiefly formed by radiating longitudinal nervures.
RADICATED (shell). When fixed by the base to another body.
RADIUS. In entomology, a single subdivision of a *digitate* wing; *i. e.* when the wings are cleft to the base into several subdivisions.
RAM. The male of the sheep or ovine genus.
RAMIFICATION. A shooting out into branches.
RAMIFY. To shoot into branches.
RAMOSE. Spread out into branches. *Antennæ* are so called when setaceous or moniliform, but having long branches from several of the joints.
RAPACIOUS. Subsisting on prey or animals seized by force.
RAREFY. To make thin and porous, or less dense.
REANIMATE. To resuscitate; to restore to life and action.
RECLINED. Leaning towards any thing as if to repose upon it.
RECONDITE. When the head of an insect is wholly covered and sheltered by the shield of the thorax.
RECREMENT. Superfluous matter separated from that which is useful.
RECREMENTITIOUS. Consisting of superfluous matter separated from that which is valuable.
RECTANGULAR. Having right angles.
RECTUM. The third and last of the large intestines.
RECUMBENT. Leaning or reposing upon any thing.
RECURRENT. When a nervure, or a branch of it, after running towards the apex of the wing, turns back and runs towards the base.
RECURVED. RECURVATED. Turned or curved outwards.
RECURVIROSTRAL. Pertaining to those birds whose beak or bill bends upwards.
REFRACTED. Abruptly bent, as if broken.
REFLECTED. Bent back or thrown backwards.
REFLEX. REFLEXED. Turned or bent back or upwards.
REFLUENT. Flowing back; as, *refluent* blood.
REFRIGERATE. To allay the heat of; to refresh.
REGIOS. A large tract or space of country.
REGURGITATED. Swallowed a second time; thrown or poured back.
REMASTICATE. To chew over and over, as in chewing the cud.
REMASCENT. Springing or rising into being again.
RENIFORM. Kidney-shaped.
RENICULUS. A small kidney-shaped spot, as seen in the wings of some nocturnal Lepidoptera.
RENNET. The concreted milk found in the stomach of a sucking quadruped, particularly of the calf.
REPAND. Cut into very slight sinuations, so as to run in a serpentine direction.
REPLETION. Superabundant fulness.
REPLICATED. Folded or plaited, so as to form a groove or channel.
REPTILIA. The class of vertebrate animals with imperfect respiration and cold blood. They constitute an order of the class *Amphibia*, including all such as are furnished with limbs or articulated extremities, as tortoises, lizards, and frogs.
RESILIENT. Leaping or starting back; rebounding.
RESPLENDENT. Reflecting the light intensely.
RESUPINE. When an object lies upon its back.
RETE MUCOSUM. The cellular layer between the true skin and the scarf skin, which is the seat of the peculiar colour of the skin.
RETICULATE. RETICULATED. Formed like a piece of net-work; having distinct veins or lines which intersect each other in various directions like the meshes of a net. Applied to the areolets of Insects, when they are extremely small and infinitely numerous.
RETIFORM. Composed of crossing lines and interstices; as, the *retiform* coat of the eye.
RETRACTED. When the head of an insect is wholly withdrawn within the trunk.
RETRACTILE. Capable of being drawn backwards. The claws of the cat tribe. When an insect can at pleasure exsert its head, or withdraw it within the trunk.
RETROFLECTED. Bent backwards.
RETROGRADE. Going or moving backwards.
RETROMINGENT. Discharging the urine backwards.
RETORSE. RETRORSED. Bent back.
RETUSE. Ending in an obtuse sinus; as, when the inner whorls of a spiral shell appear to have been pressed into the body of the shell, and the apex is below the level of the last whorl.
REVERSE. When an object is viewed with its anus towards you.
REVERSED. The spire of a shell is said to be *reversed* or *sinistral*, when the volutions turn to the *left*, or the opposite way to that of a common cork-screw.
REVIVESCENT. Regaining or restoring life and action.
REVOLUTE. Rolled outwards or backwards.
RHOMBIFORM. When the *horizontal* section is rhomboidal.
RIBBED. Having longitudinal or transverse ridges.
RIGID. Hard and stiff, so as not to bend or yield to pressure.
RIMA. A chink or interstice.
RIMOSE. When any surface possesses numerous minute narrow excavations, running into each other; chinky, like the bark of a tree.

Revose. When furrows do not run in a parallel direction and are rather sinuate.

Roselent. Covered like a plum with a bloom which may be rubbed off.

Rosaceous. A scent of roses.

Rostrate. When the anterior part of an insect's head is elongated and attenuated into a cylindrical or many-sided rostrum or beak.

Rostrum (of a shell). The beak, or its extension where the canal is situated.

Rotatory. When a body or a part of it turns wholly round, or describes a circle.

Rotifera. The name of the class of infusorial animals, characterized by the vibratile and apparently rotating ciliary organs upon the head.

Rotund. Round, circular, spherical.

Rotundate. Rotundated. Blunted, or turned at the edge; terminating in the segment of a circle.

Rubefacient. Making red.

Rubescent. Growing or becoming red.

Rubicund. Inclining to redness.

Rubineous. The red splendour of the ruby.

Rudiment. An imperfect organ, or one but partially developed.

Rudimentary. Small; imperfect; undeveloped.

Ruff. A tuft or collar of raised feathers round the neck of certain birds.

Rufescent. Tinged with red.

Rufous. A pale red. Of a reddish or dull copper colour.

Rugged. When a surface is rough, as in certain insects, with spines and tubercles intermixed.

Rugose. Rugged; wrinkled. Intricate with approximating elevations and depressions whose direction is indeterminate.

Ruminant. Chewing the cud; having the property of chewing again what has once been swallowed. The Ruminantia or *ruminating animals* are the cloven-hoofed quadrupeds, as Oxen, Sheep, Deer, Goats, Hares, and Squirrels. Rumination consists in a power of laying aside the food for a time, in a receptacle adapted for it, and afterwards bringing it back into the mouth and masticating it a second time.

Ruminate. To chew the cud.

Russet. Of a reddish brown colour and rough, like the skin of the apple called a *russet or russeting*.

Rutting Season. A term used to denote the time of the year when animals of the cervine genus follow the natural instinct to copulate.

Sabulous. Sandy; gritty.

Sacciform. Shaped like a sac or bag.

Salacious. Lustful; having a strong propensity to venery.

Salient. Moving by leaps, as frogs.

Saline. Partaking of the qualities of salt.

Saliva. The fluid which is secreted by the salivary glands; it serves to moisten the mouth and tongue, and also to promote digestion.

Salivary. Secreting or conveying saliva; as, the *salivary* glands.

Saltatorious. When the ventral segments or the anus [of an insect], are furnished with elastic processes which enable the animal to leap.

Salubrious. Healthful; as a salubrious climate.

Sanative. Having the power to heal or cure.

Sanguiferous. Flowing with blood.

Sanguineous. Of the colour of blood, or resembling blood.

Sanguivorous. Sanguinivorous. Eating or subsisting on blood.

Sarcophaga. Flesh-eating animals.

Sarcophagous. Pertaining to those animals which subsist by eating flesh; feeding on flesh.

Saurian. The epithet by which reptiles belonging to the *lizard* tribe (*Lacerta*) are distinguished.

Saurioid. An epithet used to distinguish a group of fossilized fishes of the carboniferous and secondary formations.

Saxatile. Living among rocks.

Scabious. Rough from the effects of the scab or mange.

Scabrous. Rough and rugged; rough to the touch from granules scarcely visible.

Scalloped. Indented at the edges.

Scapular. Pertaining to the shoulders or the shoulder-blades, *scapula*.

Scapularies. In ornithology, those feathers which take their rise from the shoulders of birds, and cover the sides of the back.

Scarify. To cut or scratch the skin of an animal, or to make small incisions, so as to draw blood from the smaller vessels without opening a large vein.

Scaterous. Abounding with springs.

Scattered. When simple spots or marks are separate from each other and not arranged in a certain order.

Scent. The power of smelling; to perceive by the olfactory organs, as to *scent* game.

Sciatic. Pertaining to the *hip*; as, the *sciatic* artery.

Scientific. According to the rules or principles of science; as, a *scientific* arrangement of shells, fossils, or minerals, &c.

Scopiferous. Furnished with one or more dense brushes of hair.

Scopiform. Having the form of a broom or besom.

Scoria. Dross; the recrement or matter thrown off from metals in fusion.

Scoriaceous. Partaking of the nature of scoria.

Scoriform. In the form of dross; like scoria.

Scraggy. Lean with roughness; rough with irregular points, or an uneven surface.

Scrobiculate. Having the surface filled with small hollows or cavities; pitted.

Scrotum. The integument which contains the male organs of generation.

Scutibranchiata. The order of Gasteropodous Mollusca, in which the gills are protected by a shield-shaped shell.

Scutiform. Having the form of a shield or buckler.

Scurf. A dry scab or crust formed on the skin of an animal.

Scutate. Covered or protected by large flat scales.

hield-shaped.
third section of the upper egment in insects.
ond section of the upper egment in insects.
colour of sea water.
huge marine animal like m, and by some *supposed* n.
eration of taking seals and s.
The line formed by the ves.
isting of or pertaining to aceous *humour*, a suet-like by the *sebaceous glands*, glands seated in the cel- under the skin.
SECONDARY QUILLS. Those from the second bone of posterior wings of an in- nated *secondary* if the su- en at rest are *not* placed
eparated by animal secre-
forming the office of secre- ry vessels. The organs of various form and structure, eral are those called *glands*. ible matter, &c. are pro-
en the last joint of the e triangular, and the pre- connected with the vertex
ustomed to sit much; ge- to persons whose employ- *sedentary* life almost in- there are few, we believe, it to a life of healthful
The act of dividing into
parts into which the body vided, and which are thir- t inoculating joints of the
et apart, separated from
ition *semi* signifies *half*, or cted. Thus, *semi-cordate*, d; *semi-crustaceous*, half *mi-transparent*, half or im- parent; *semi-cylindrical*, , or cut through length- *dified*, imperfectly shaped *i-osseous*, half as hard as *icular*, of the shape of a *-lunar*, crescent-shaped, or half moon; *semi-pellucid*, cid or shining; *semi-vitri-* inverted into glass, &c. ing to seed, or to the ele- tion.
EMI-PALMATED. A term e toes are connected by a ly half their length.
When the head of an in- ered by the shield of the
ng to old age.
ing six eyes.

SENSATION. The perception of external objects by means of the senses.
SENSIBILITY. The capacity of feeling or perceiving the impressions of external objects.
SENTIENT. Having the faculty of perception.
SEPTIC. Proceeding from or generated by putrefaction.
SEPTIFORM (*Canthus*). When the canthus forms an elevated ridge or *septum*.
SERICEOUS. Silky; having a soft smooth surface resembling silk.
SERICTERIA. The glands which secrete the silk in the silkworm.
SERIAL. Pertaining to, or arranged according to a series.
SERIES. An order or subdivision of some class of natural bodies.
SERPENTINE. Winding; spiral; like a serpent; running in a serpentine direction.
SERRATE. SERRATED. Toothed or notched with points like a saw.
SERRATURE. An indenture in the edge of any thing, like those of a saw.
SERRICATED. Covered with a short, thick, and silky down.
SERRULATE. Having very minute teeth or notches.
SESQUIALTEROUS (fascia). When both wings of an insect are traversed by a continued band, and either the primary or secondary by another.
SESSILE. Attached to any substance by a base without a stalk or peduncle. When the head of an insect does not move in the socket of the trunk, but is attached to it by a kind of ligament.
SETACEOUS. Bristly; set with bristles.
SETÆ. Bristles, or parts resembling bristles.
SETIFEROUS. Producing bristles.
SETIFORM (*antennæ*). Short and rigid, tapering from the base to the apex like a bristle.
SETIGEROUS. Bristly. When antennæ terminate in a bristle.
SETOSE. Covered with bristles; furnished throughout with irregular, harsh bristly hair.
SETULOSE. Setose with the bristles truncated.
SEXUAL. Denoting what is peculiar to the distinction and office of male and female.
SHAGREEN. A kind of grained leather prepared from the skin of a fish, a species of *Squalus*.
SHEATH-WINGED. Having cases for covering the wings; as, a *sheath-winged* insect.
SHELL. The crustaceous or testaceous covering of certain animals: as, the *shell* of a tortoise; the *shell* of a lobster; the *shell* of an oyster, &c.
SHELL-FISH. An aquatic animal whose external covering consists of a shell, crustaceous or testaceous; as, lobsters, crabs, oysters, &c.
SHINING. Reflecting the light, but not intensely.
SIBILANT. Making a hissing sound.
SICCATIVE. That which promotes the process of drying.
SILICIOUS. Partaking of the nature and qualities of *silex*, one of the primitive earths usually found in the state of stone.

Simious. Resembling an ape or monkey.

Simous. Having a very flat or snub nose with the end turned up; Concave; as, the *simous* part of the liver.

Simple (*oculi*). Eyes which do not consist of an aggregate of hexagonal lenses.

Simultaneous. Existing or happening at the same time.

Sinew. A tendon; that which unites a muscle to a bone.

Sinistral (as opposed to *dextral*). When a spiral shell has the aperture on the left side.

Sinistrorsal. Rising from left to right as a spiral line or helix.

Sinistrous. Being on or inclined towards the left side.

Sinuate. Having large curved breaks in the margin resembling bays.

Sinuous. Wavy.

Sinus. A groove, channel, or depression.

Siphon. A cylindrical tube; the pipe by which the chambers of a shell communicate; a fleshy sucker.

Siphonostomous. A term applied to Crustaceous and other animals furnished with a suctorious mouth like a tube.

Siphuncules. A cylindrical canal perforating the partitions in polythalamous shells, as in *Nautilus Spirula*.

Sizy. Thick and glutinous; as, *sizy* blood.

Skeleton. The bones of an animal body separated from the flesh and retained in their natural position. When the bones are connected by the natural ligaments, it is called a *natural* skeleton; when by wires or other foreign substance, an *artificial* skeleton.

Smaragdine. The green splendour of the *emerald*.

Socket. Any cavity which receives and holds something else; as the *sockets* of the teeth or of the eyes.

Solids. In anatomy, the bones, flesh, and vessels of animal bodies, in distinction from the blood, chyle, and other fluids.

Soliped. An animal whose foot is not cloven.

Solipedes. A family of mammalia, of the order *Pachydermata*, having only one apparent toe and a single hoof on each foot. One genus only is known — *Equus*.

Solivagant. Wandering alone.

Soluble. Susceptible of being dissolved in a fluid.

Somniferous. Causing or inducing sleep.

Somnolent. Drowsy; inclined to sleep.

Soporific. Soporiferous. Causing sleep, or tending to produce it.

Soul. The spiritual, rational, and immortal principle in Man, which distinguishes him from, and elevates him infinitely above, the brute creation.

Spasmodic. Affected with *spasms* or involuntary contraction of muscular fibres in animal bodies.

Spathaceous. Having a sheath-like calyx.

Spathiform. Resembling *spar* in form.

Spatulate. Rounded and broad at the top and becoming narrow like a spatula.

Spawner. The female fish.

Spayed. Castrated, as a female beast.

Specific. Designating the peculiar properties of an animal, which constitute its species, and distinguish it from others. The *specific* name of an animal is appended to the name of the genus, and constitutes the distinctive name of the species.

Species. The lowest link in the chain of scientific classification, and that which admits of no further division. A species comprehends all those animals which may reasonably be supposed to be descended from one common, original stock; thus, all horses compose but a single species; and, in the same manner all oxen, sheep, goats, dogs, &c. compose respective and appropriate species; and where a marked difference in any of them exists, they are said to be *varieties* of the species.

Speculum. The bright spot on the wings of Ducks, &c.

Spermatheca. A receptacle attached to the oviducts of insects.

Spermatozoa. The peculiar microscopic moving filament and essential parts of the fertilising fluid.

Spermatophera. The cylindrical capsules or sheaths in the Cephalopods which convey the sperm.

Sphacelus. Mortification of the flesh of a living animal; caries or decay of a bone.

Sphenoidal. Resembling a wedge; relating to the *sphenoid bone* at the basis of the skull.

Sphere. An orbicular body.

Spherical. Globular; as drops of water take a *spherical* form.

Spherulate. Having one or more rows of miante tubercles.

Spherule. A little sphere or spherical body.

Spicula. Fine pointed bodies like needles.

Spicular. Having sharp points.

Spine. A fine, long, rigid, pointed process.

Spinigerous (*elytra*). When the Coleoptera have a spine common to these both.

Spinneret. The articulated tubes with which spiders fabricate their webs.

Spinous. Spinose. Armed with spines.

Spiracles. The external apertures of the trachea in insects.

Spiral. Twisted like a cork-screw.

Spire (of a univalve shell). All the whorls except the one in which the aperture is situated, which is termed the *body*.

Spissitude. The drossiness or sanguineous which belongs to substances not perfectly liquid nor perfectly solid; as, the spissitude of coagulated blood, &c.

Spongiose. Pertaining to a soft elastic substance resembling sponge.

Spontaneous. Acting by its own impulse; as, *spontaneous* motion.

Sportsman. One who pursues the sports of the field.

Spumous. Consisting of froth or scum.

Spur. A spine that is not a process of the crust, but is implanted in it.

Spurious. Not genuine or legitimate.

Spurious or Bastard Wing. (*Alula spuria.*) Three or five quill-like feathers, placed at a small joint rising at the middle part of the wing in birds.

Squab. Unfledged; young and unfeathered; as, a *squab* pigeon.

SQUAMIFORM. Having the form or shape of scales.
SQUAMOSE. SQUAMOUS. Scaly; covered with minute scales.
SQUARROSE. Cut into *lacinioe*, or deep segments, that are elevated above the plane of the surface.
STAMINA. Whatever constitutes the strength or support of any thing; as, the bones are the *stamina* of animal bodies; or, that man is likely to attain longevity, his *stamina* is so good, *i. e.* his frame is robust and his health is unimpaired.
STELLATED. Consisting of star-like figures.
STEMMATA. In entomology, three smooth hemispheric dots, generally on the top of the head; chiefly observable in hymenopterous insects, sometimes called ocelli. The simple and minute eyes of worms, and those which are added to the large compound eyes.
STEREELMINTHA. Intestinal worms which have no true abdominal cavity.
STERILE. Barren; producing no young.
STERNAL. Relating to the *sternum* or breast-bone.
STERNELLUM. The third section of the lower surface of the segments of insects.
STERNUM. The under surface of the segments of insects; in vertebrated animals, the breast-bone.
STIGMATA. The breathing-pores of insects.
STOMACH. A membranous receptacle in animal bodies, in which food is prepared for entering into the several parts of the body for its nourishment.
STOMATO-GASTRIC. Pertaining to the nerves which are principally distributed upon the stomach and intestinal canal.
STRIÆ. In conchology, fine thread-like lines in the exterior surface of many shells, longitudinal, transverse, or oblique.
STRIATE. STRIATED. Marked with lines or stripes. Having rather *slightly* impressed longitudinal parallel lines.
STRIDULOUS. Making a small harsh creaking sound.
STRUCTURE. Manner of organization.
STRUTHIOUS. Pertaining to or like the ostrich.
STUPEOUS. Covered with long loose scales resembling *tow*.
STUPELOSE. Covered with coarse decumbent hairs.
SUB. In composition, *sub* means *almost* or *approaching to*; as *sub-fusiform*, nearly fusiform; *sub-globose*, almost globular, &c.
SUBAQUEOUS. Living or being under water.
SUBCLAVIAN. Situated under the clavicle or collar-bone.
SUBCORDATE. In shape somewhat like a heart.
SUBCUTANEOUS. Situated under the skin.
SUBEREOUS. Pertaining to a soft elastic substance somewhat resembling *cork*.
SUBGENERA. Subordinate genera.
SUBGLOBULAR. In form approaching to that of a globe; nearly round.
SUBJACENT. Lying nearly, but not directly underneath.
SUBLIMATED. Brought into a state of vapour by heat, and again condensed.
SUBMERGED. Put under water.
SUBMUSCULAR. Placed beneath muscles or muscular layer.
SUBOCULAR. Situated under the eye.
SUBORBICULAR. Nearly spherical.
SUBOVATE. Nearly in the form of an egg.
SUBPEDUNCULATE. With a short pedicel.
SUB-PREHENSILE. Holding in a moderate degree.
SUBSIDENCE. The act of sinking or gradually descending, as ground.
SUBSIST. To be maintained with food.
SUBSPECIES. A subordinate species.
SUBULATE. Awl-shaped.
SUCCEDANEOUS. Supplying the place of something else.
SUCCULENT. Full of juice; juicy.
SUCTORIAL. Living by means of, or endued with the power of suction.
SUCTORIOUS. When the upper jaws of an insect have an orifice by which they imbibe their food.
SUDORIFIC. Exciting perspiration.
SUFFRAGINOUS. Pertaining to the knee joint of a beast.
SULCATE. SULCATED. Furrowed. Having deeply impressed longitudinal parallel lines.
SULCI. Furrows or ridges.
SUPER. A Latin preposition, much used in composition, signifying *above* or *over*; as *superincumbent*, lying or resting on something else; *superessential*, essential above others; *superhuman*, above or beyond what is human.
SUPRACILIARY. Situated above the eyebrow.
SUPRA-ORBITAL. Being above the orbit of the eye.
SUSPENDED. When one part is joined to another by a ligature, without being inserted in it.
SUSTENTATION. Use of food; support of life.
SUTURAL. Appertaining to a suture.
SUTURE. A hollow line of division in univalve shells, the spiral line of which separates the wreaths. The seam or joint which unites the bones of the skull. The line of separation of any two parts of a crust which are connected only by membrane or ligament, but do not inosculate. —*Spurious* suture. An impressed line in any part of a body, which resembles a suture, but does not really divide the crust.
SYMPHYSIS. In anatomy, the union of bones by cartilage: in surgery, a coalescence of a natural passage.
SYNARTHROSIS. Union of bones without motion, as in sutures.
SYNCHONDROSIS. The connection of bones by means of cartilage.
SYNDACTYLOUS. Having the front toes united, the terminal joint only being free.
SYNONYM. A word or name which has the same signification as another. *Synonymous terms* are names applied to the *same* groups or species of animals by different authors.
SYNOVIAL. Pertaining to *synovia*, a fluid secreted into the cavities of the joints, for the purpose of lubricating them.
SYSTEMATIC. Formed with regular connection and adaptation or subordination of

and often accompanied by membranous or fleshy cushions (pulvilli). The number of joints varies from two to five.

TAWNY. A pale dirty orange colour.

TECTIBRANCHIATE. Belonging to the order of Mollusca in which the gills are covered by the mantle.

TEGUMENT. The skin or other natural covering of an animal body; a substance serving to defend any otherwise exposed part.

TEGUMENTARY. Having the properties of, or belonging to, a tegument; consisting of tegaments.

TELSON. The thirteenth or last segment of insects.

TEMPORAL. Pertaining to the temples; as, the *temporal* arteries, &c.

TENTACULA. The feelers of snails, &c.

TEREBELLA. The instrument or organ with which many female insects bore holes to deposit their eggs.

TERMINAL. Forming the extremity.

TERMINOLOGY. That branch of the science of Natural History which explains all the terms used in the description of natural objects.

TERTIALS. Those feathers in the wings of birds which take their rise from the second bone, at the *elbow-joint*, forming a continuation of the secondaries, and seem to do the same with the scapulars, which lie over them.

TERTIARY (in Geology). Of the third formation. The *tertiary formation* consists of a series of horizontal strata, more recent than chalk beds, consisting chiefly of sand and clay, and frequently embracing vast quantities of organic remains of the larger animals.

TESSELATED. Chequered like a chess-board.

TESTACEA. The third *order* of worms, including those which are covered with a testaceous shell.

TESTACEOUS. Composed of the materials which constitute shells, viz. carbonate of lime and animal matter. Pertaining to

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TRANSFIGURED. Changed in form.
TRANSFORMED. Changed in form or external appearance.
TRANSFUSED. Poured or transferred from one vessel into another.
TRANSLUCENT. TRANSLUCID. Transparent; clear.
TRANSMARINE. Living or being beyond the sea.
TRANSMIGRATORY. Passing from one place, body, or state to another.
TRANSMITTED. Caused or suffered to pass through; as, sound is *transmitted* by means of vibrations of the air.
TRANSPIRE. To exhale; to pass off by insensible perspiration.
TRANSUDE. To pass through the pores or interstices of texture, as perspirable matter or other fluid.
TRANSVERSE. Crossing each other: when the longitudinal line is cut through at right angles.
TRAPEZATE. Quadrilateral with the *four* sides unequal, and none of them perfectly parallel.
TRAPEZIFORM. Shaped like a trapezium.
TRAPEZOID. Quadrilateral with *two* sides unequal and parallel.
TREAD. To step or walk; to copulate, as fowls.
TREMATODA. The order of Entozoa characterized by suctorial pores.
TRENCHANT. Sharp; cutting; as *trenchant* claws.
TRICHOTOMOUS. Divided into three parts.
TRIDACTYLE. Three-fingered.
TRIDACTYLOUS. Having three toes.
TRIDENTATE. Having three teeth.
TRIEDRAL. Having *three* sides.
TRIFORM. Having a triple form or shape.
TRIGONAL. Having three angles.
TRILOBATE. Divided into three lobes.
TRIPARTITE. Divided into three parts.
TRIPEDAL. Having three feet.
TRIQUETROUS. Whose *horizontal* sections are equilateral triangles.
TRIRADIATE. Consisting of three spokes or rays.
TRIRADIATED. Having three rays.
TRITURATE. To reduce to a very fine powder by pulverization.
TRIVALVULAR. Having three valves.
TROGLODYTICAL. Resembling, in mode of life, the *Troglodytes*, a people of Ethiopia, whom the ancients represented as living in caves.
TROPHI. The parts of the mouth (in insects) employed in acquiring and preparing the food.
TROPICAL. Pertaining to or being within the tropics; as, *tropical* climates, winds, &c.
TROT. The quick pace of a horse or other quadruped, when he lifts one fore foot and the hind foot of the opposite side.
TRUNCATE (*elytra*). When they are shorter than the abdomen and transverse at the end.
TRUNCATED. Cut off short, or terminating abruptly.
TRUTTACEOUS. Belonging to fish of the Trout kind.
TUBERCLE. A little pimple-like knob.
TUBERCULAR. TUBERCULOUS. Full of knobs or pimples.
TUBERCULATE. Covered with small protuberances.
TUBEROSITIES. Prominent knots or excrescences.
TUBICOLAR. Inhabiting a tube.
TUBULAR. In the shape of a tube; hollow and cylindrical.
TUBULATE. TUBULOUS. Hollow.
TUBULOSE. When the tongue of an insect emerges from the labium, is long and tubular, and capable of inflation.
TUFT. A bunch of feathers or hairs.
TUMID. Protuberant; enlarged or distended.
TUMULAR. Formed into a heap or hillock.
TUNICATA. The class of acephalous Mollusca which are enveloped in an elastic tunic not defended by a shell.
TUNICATED. Coated.
TURBINATE. Top-shaped, triangular with curved sides.
TURBINATED. Wreathed conically from a larger base to a kind of apex; as *turbinated* shells.
TURBINIFORM. Whose vertical section is turbinate, and *horizontal* circular.
TURGID. Swollen.
TURRETED. When the head of an insect is producted into a kind of columnar recurved turret or rostrum, in the sides of which, towards the end, the eyes are fixed.
TURRILITE. The fossil remains of a spiral multilocular shell.
TYMPANUM. The drum of the ear.
TYPE. A general form, such as is common to the species of a genus, or the individuals of a species.
TYPIFIED. Figured, or represented by a model form, or resemblance.

UBIQUITY. Existence in all places or everywhere at the same time.
ULGINOUS. Muddy; oozy; slimy.
ULNAR. Pertaining to the *ulna*; as, the *ulnar* nerve.
ULTRAMARINE. Situated or beyond the sea. Also, the name of a beautiful and durable sky-blue colour, formed of the mineral called *lapis lazuli*.
UMBILICAL. Pertaining to the navel.
UMBILICATED. Having a depression in the centre like a navel.
UMBILICUS. A hole, either deep or shallow, on the side of the inner lip in spiral shells, formed by the inner edges of the whorls not touching each other.
UMBLES. The entrails of a deer.
UMBO (in bivalve shells). The prominent part which turns over the hinge.
UMBONATE. Bossed; having a raised knob in the centre.
UMBRACULATE. When there is upon the head of insects an umbrella-shaped process.
UNCINATED. Set or covered with bent spines like hooks.
UNCTUOUS. Fat; oily; having a resemblance to oil or grease.
UNDERGROUND. Below the surface of the earth.
UNDIAPHONOUS. Not pellucid.
UNDOSE. Having undulating nearly paral-

lel broader depressions which run into each other, and resemble the sand of the sea-shore when left by the tide.

UNDULATED. Having a waved surface.

UNDULATING. Waving; rising and falling, vibrating.

UNDULATORY. Moving in the manner of waves; as, the *undulatory* motion of the air is supposed to be the cause of sounds.

UNFIGURED. Representing no animal form.

UNFLEDGED. Not yet furnished with feathers.

UNGUES. Claws.

UNGUICULATED. Having sharp claws; armed with a claw.

UNGULA. The terminal joint of the *tarsus*.

UNGULATE. Shaped like a horse's hoof.

UNICORNOUS. Having only one horn.

UNIGENOUS. Of one kind; of the same genus.

UNILATERAL. Being or existing on one side only.

UNILOCULAR. With a single chamber or compartment.

UNIPAROUS. Producing one at a birth.

UNIVALVE. The name given to those shells which consist of one valve only.

UNIVALVULAR. Having only one valve.

UNNATURAL. Contrary to the laws of nature; not in conformity with natural feelings or instincts.

URCEOLATE. Swelling in the middle, like a pitcher.

UROPYGIAL. Belonging to the rump.

URSINE. Pertaining to or resembling a bear.

UTERINE. Pertaining to the *uterus* or womb.

VACCINE. Pertaining to cows; as, the *vaccine* disease or cow-pox.

VAGINOPENNOUS. Having the wings covered with a hard case or sheath, as coleopterous insects.

VALVE. One of the pieces or divisions in bivalve and multivalve shells. A membraneous partition within the cavity of a vessel, which opens to allow the passage of a fluid in one direction, and shuts to prevent its regurgitation.

VALVULAR. Containing valves.

VARICES. Longitudinal raised bands or ridges, which occur at regular distances in some univalves. They are the remnants of former apertures, and mark the progressive enlargement of the shell.

VARICOSE. Preternaturally enlarged; as, *varicose* veins.

VARIEGATED. Diversified in colours or external appearance.

VARIETY. The well-marked difference which often occurs between animals of the same species.

VARIOLOUS. Pertaining to or resembling the small-pox.

VASCULAR. Composed of, or pertaining to, the vessels of animal bodies, as arteries, veins, and the like, which form the *vascular* system.

VEGETATIVE. Having the power to produce growth in plants.

VENTER. The abdomen or lower belly.

VENT. That part of a bird near the anus; that part near the extremity of the abdomen in birds.

VENT-FEATHERS. Those feathers that lie from the vent, or anus, to the tail underneath.

VENTRAL. Pertaining to the belly. The *ventral* fins in fishes are placed between the anus and the throat.

VENTRICOSE. Swollen in the middle; inflated.

VENTRICULAR. Belonging to a ventricle.

VENTRICULUS. The second portion of the alimentary canal in insects.

VERMES. A term for worm-like animals: applied in a very extensive sense by Linæus.

VERMICULAR. Resembling a worm, and more particularly, the motion of a worm; as the *vermicular* motion of the intestines, called also *peristaltic*.

VERMICULATE. VERMICULATED. Covered with tortuous markings or excavations, like worm-eaten wood.

VERMIFORM. Worm-shaped.

VERMILION. A delicate bright red colour.

VERMINOUS. Tending to breed vermin.

VERMIPAROUS. Producing worms.

VERMIVOROUS. Feeding on worms.

VERNACULAR. Belonging to a person by birth or nature.

VERNAL. Belonging to the spring; appearing in the spring.

VERRICULATE. Having one or more verricules.

VERRICULE. A thick-set tuft of parallel hairs.

VERRUCA. A small flattish wart-like prominence.

VERRUCOSE. Covered with tubercles resembling warts.

VERSICOLOURED. Of various and changeable colours.

VERTEBRAL. VERTEBRATED. Belonging to the *Vertebrata*; having a back-bone or vertebral column, containing the spinal marrow.

VERTEBRATA. That large and important class of animals distinguished by having a back-bone or vertebral column; as man, quadrupeds, birds, amphibia, and fishes.

VERTEBRÆ. The joints of the spine or back-bone of an animal.

VERTEX. The top, or highest part.

VERTICAL. Erect; perpendicular.

VERTICULATE. Arranged like the rays of a wheel or spindle.

VESICATORY. Having the property of causing blisters.

VESICLE. A little bladder, or a portion of the cuticle separated from the skin and filled with some humour.

VESICULÆ. Receptacles like little bladders.

VESICULAR. VESICULOUS. Pertaining to vesicles; having little bladders or superficial glands.

VIBRATILE. When there is a constant undulation of any part.

VIBRATORY. Consisting in vibration or undulation; as, a *vibratory* motion.

VIBRISSÆ. The hairs that, in certain birds, stand forward like feelers; in some birds they are slender, as in Flycatchers, &c., and point both upwards and downwards, from both the upper and under sides of the mouth.

VICARIOUS. Filling the place of another.
VIGOUR. Active strength or force of body in animals.
VILLI. Small processes like the pile of velvet.
VINOUS. Having the qualities of wine.
VIOLACEOUS. Of a violet colour, or resembling violets.
VIPEROUS. Like a viper, or having the qualities of one.
VIRIDITY. Greenness; verdure.
VIRILE. Belonging to the male sex.
VIRULENT. Very poisonous or venomous.
VIRUS. Foul or contagious matter in an ulcer, &c.
VISCERA. The organs contained in any cavity of the body, particularly in the three venters, the head, thorax, and abdomen.
VISCID. Glutinous; not readily separating.
VISCOUS. Clammy; adhesive; tenacious; as a *viscous* juice.
VISUAL. Pertaining to sight; as, *visual* rays are lines of light, imagined to come from the object to the eye.
VITALS. Parts of animal bodies essential to life, such as the viscera.
VITELLINE. Of or belonging to the yolk of an egg.
VITELLUS. The yolk of an egg.
VITREOUS. Resembling glass; as, the *vitreous* humour of the eye.
VITRESCENT. Tending to become glass.
VITRIFORM. Having the form or resemblance of glass.
VIVACIOUS. Lively; active; sprightly.
VIVARY. A place for keeping living animals in; as, a pond, a park, &c.
VIVID. Exhibiting the appearance of life or freshness.
VIVIFY. To endue with life; to animate.
VIVIPAROUS. Pertaining to those animals which bring forth their young alive, as distinguished from *oviparous*, producing eggs; as birds.
VOCAL. Uttered or modulated by the voice; as the *vocal* music of the woods.
VOCIFEROUS. Clamorous; making a loud outcry.
VOIDED. Emitted; evacuated; as, he *voided* worms.
VOLATILE. Flying; passing through the air on wings, or by the buoyant force of the atmosphere; having the power to fly. Also, capable of wasting away, or of easily passing into the aeriform state.
VOLUTE. A spiral turn in shells, &c.
VOLUTITE. A petrified shell of the genus *voluta*.
VOMER. The palate or upper part of the mouth of a fish.
VORACIOUS. Rapacious; eager to devour.
VORTEX. A whirlpool; a whirlwind.
VULPINE. Pertaining to the fox.
VULTURINE. Having the qualities of, or resembling a vulture.
VULVA. A mark in several bivalve shells, formed when the valves are united on the posterior and anterior slopes.

WALL-EYED. Having a disease in the crystalline humour of the eye, which gives a white appearance.
WAMPUM. Shells used by the American Indians as money. This word is a corruption of "Wampampes," Indian money; so called by the Narragansets and other tribes found in New England by the first British settlers: it was of two kinds, white and black; the one made of the shell of a periwinkle, the other of the bivalve *Venus mercenaria*. — *Hon. C. A. Murray's Travels*, vol. i. p. 248.
WATTLE. The fleshy excrescence which grows under the throat of some fowls, as the turkey, and also of some fishes.
WEAN. To accustom and reconcile a child or other young animal to a want or deprivation of the breast.
WEB. The membrane which unites the toes of many water-fowls.—Also, a plexus of very delicate threads or filaments which a spider spins from its bowels, and which serves as a net to catch flies and other insects for its food.
WEBBED. Having the toes united by a membrane or web; as the webbed feet of aquatic fowls.
WEB-FOOTED. Palmiped; having webbed feet.
WHELKY. Protuberant and embossed; resembling the *whelk*, a marine univalve shell.
WHINE. To express murmurs by a plaintive cry.
WHIR. To sound like a body passing swiftly through the air.
WHISTLE. A call, such as sportsmen use to their dogs; a shrill sound made by pressing the breath through a small orifice of the lips; the sound of winds passing among trees or through crevices, &c.
WHITE (of the eye). That part of the ball of the eye surrounding the iris or coloured part. It owes its whiteness to the *tunica albuginea* or *adnata*, a partial covering of the fore part of the eye, formed by the expansion of the tendons of the muscles which move the eye-ball. — *White of an egg:* the albumen, or pellucid viscous fluid, which surrounds the *vitellus* or yolk.
WHIZ. To make a humming or hissing sound, like a ball or arrow passing through the air.
WINDGALL. A soft tumour on the fetlock joints of a horse.
WING-SHELL. The shell that covers the wings of certain insects.
WITHERS. The juncture of the shoulder-bones of a horse, at the bottom of the neck.
WOOD-PRETTER. An insect or worm that eats wood.
WOODLAND. Land covered with trees, which are suffered to grow either for fuel or timber.
WRECK. The ruins of a ship stranded, or cast on shore and fractured.
WRINKLED. Ridges and furrows formed on the skin or any smooth surface.
WRITHE. To twist with violence; to distort.

XIPHOID (cartilage). A small cartilage situated at the bottom of the breast-bone,

lel broader depressions which run into each other, and resemble the sand of the sea-shore when left by the tide.

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